FORESTS OF NORTH-EAST SCOTLAND

FORESTRY COMMISSION GUIDE

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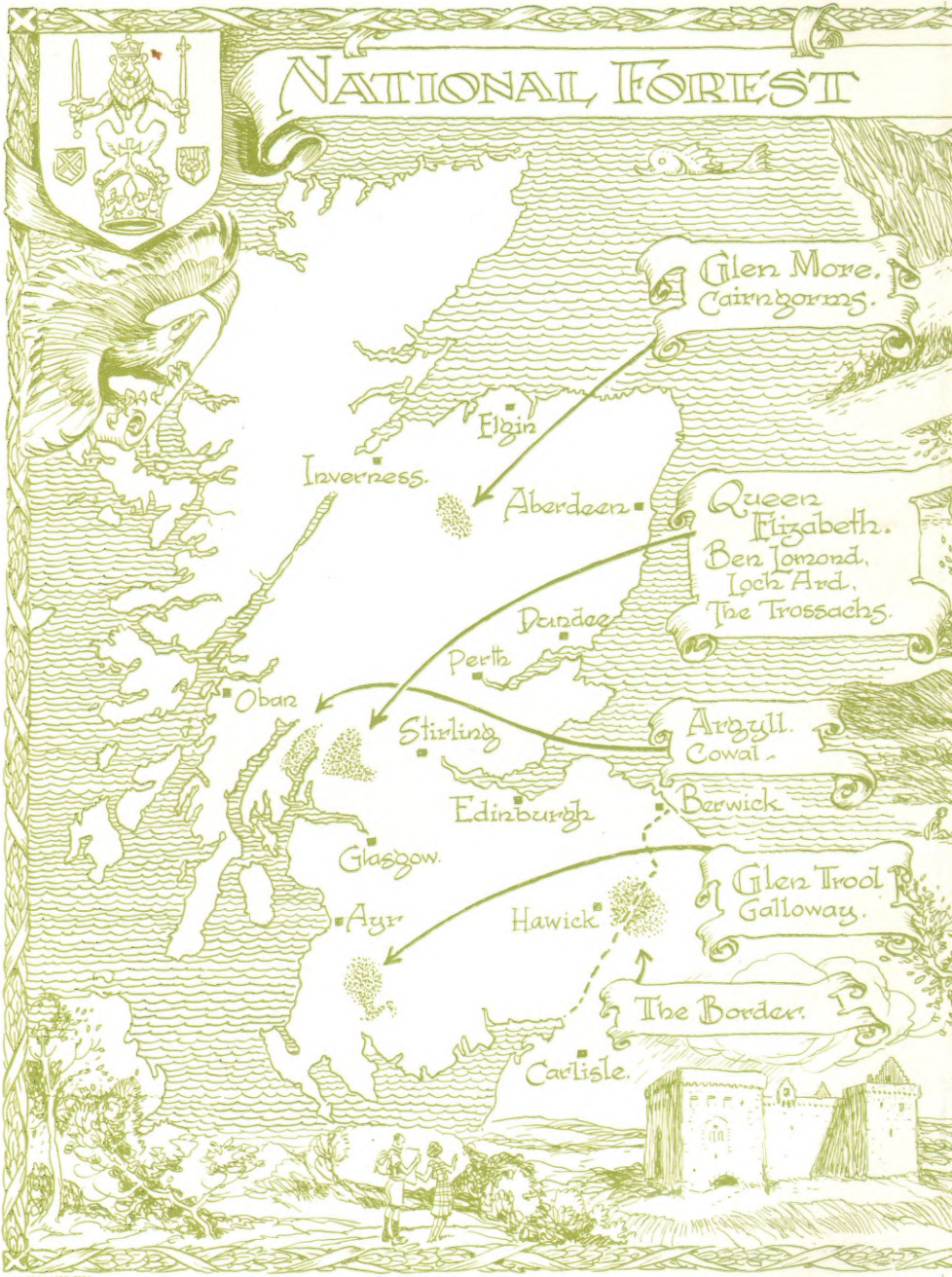
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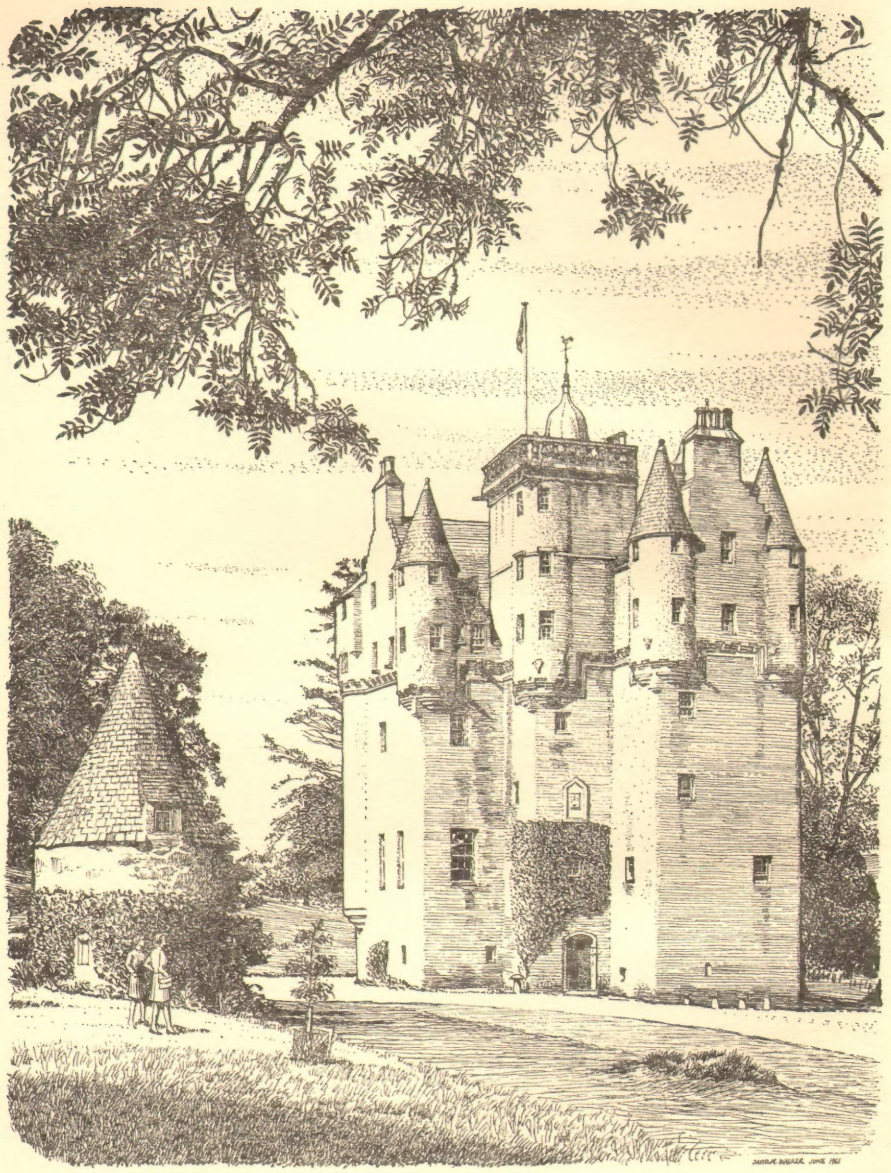

Craigievar Castle

FORESTRY COMMISSION GUIDE

FORESTS OF NORTH EAST SCOTLAND

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Timber Floating on the Dee

FOREWORD

by

H. M. Steven, C.B.E., M.A., PH.D.,
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In recent years the Forestry Commission has published a number of guides to forests in the different regions of Britain and it is now the turn of the North East of Scotland. This region is relatively rich in forests and, except in Buchan, they form a distinctive part of the pattern of the landscape. Moreover, there still survive important remnants of the original native pinewoods, considerable areas of seminatural birchwoods, and a few interesting seminatural oakwoods. Forestry, that is the cultivation of forests, has been practised here for at least two and a half centuries. The utilisation of the forest wealth of the region goes back much farther, and some of the pioneer work in the use of rivers to float timber from their head waters was done here. Moreover, the use of home-grown timber is still more important in this region than anywhere else in Britain. This century has seen in our countryside both the creation of forests and their devastation. Both the Forestry Commission and enthusiastic private owners have planted and replanted large areas. But, in

order to provide timber for essential purposes, very heavy fellings had to be made during two world wars, principally in privately owned woodlands; during the last, half a million tons of processed timber came from the Dee Valley alone. The gale of 31st January, 1953, caused unprecedented devastation in our woodlands; indeed it was one of the worst catastrophes of this kind every recorded in Europe. Nevertheless, the forest owner and forester were not daunted by such losses; they have recreated the forests again as this guide shows.

The forester bases his practices on many sciences, and he is interested not only in the different characteristics of the countryside, but also on the effect of the impact of past history on them. This guide, therefore, not only consists of chapters on forests and forestry, but also on plant life, wild animals and birds, topography and geology, and on the history and antiquities of the North East of Scotland. There are also short chapters on the landscape and on the distinctive literature of the region, as well as on the mounth roads in it which have had a long history.

Thus this guide provides a rich and varied banquet, and it cannot but interest everyone in the countryside, young and old, resident or visitor. I therefore commend it to all, knowing that every reader will find something new and interesting in it.

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The aerial photos of Fochabers and Ballindalloch are by Aerofilms of London.

The Road by Bennachie

Come when the hills to Beauty break
And tender flowers of Orchis wake
Sudden, sweet, swift excursion make
To Cambus Woods.

Marion Angus

INTRODUCTION

BY H. L. EDLIN

EVERYONE who lives in the North East of Scotland, or visits it on business or pleasure, is soon aware of the importance of forestry in its regional economy. The four counties with which this guide deals – Aberdeen, Banff, Kincardine and Angus, together with a narrow strip of Morayshire along the Spey – have a greater concentration of woodland than any comparable region in Scotland; together they hold some 300,000 acres of forest land, representing 12 per cent of their surface, which is nearly twice the average density for Scotland as a whole. This woodland has long been managed with the thrift and prudence for which the region is famous, and a long tradition of forestry skill has here been fostered and maintained.

Originally this tradition was developed by the leading landowners and their woodland staff, aided by nurserymen and timber merchants. Since 1919 the Forestry Commission has played its part by providing the landowners with skilled advice on management, and with grants for tree planting, while at the same time developing its own new forests in the region. These now number thirty, and hold over 120,000 acres of tree-growing ground. Wherever one travels in the North East the green tapestry of the thriving plantations is

always present in the scene. Along the foothills between the rich arable fields and the bold outlines of the Grampian mountains, or flanking the turbulent course of great rivers like the Dee and the Don, the woods of pine, larch and spruce march for mile after mile, neighboured here and there by the oak, beech and sycamore that shield some old castle or mansion from the winds, or the birchwoods sheltering the sheep deep in some glen.

This Guide has been planned to help people to appreciate and enjoy the woods of the North East to the full. Although many are under private ownership, there is nowhere any lack of public roads and footpaths that will take the visitor in amongst the trees, while many policy grounds and gardens, owned by individuals or the National Trust for Scotland, are open at set times.

The Forestry Commission co-operates by making its new forest roads freely open – under all normal conditions – to pedestrians. Good access roads, and an effective network of rail and bus services, bring the visitor speedily to the fringe of forests which he is free to enter and explore, provided he knows where to start.

One chapter, therefore, takes the reader on journeys from Aberdeen through the woods of the Dee valley and thence north across Buchan to the eastern banks of the Spey. Another chapter leads him past Stonehaven to the southern face of the Grampians, Strathmore and the glens of Angus. A third chapter outlines the forester's work in this region, so that the visitor can understand those operations that he encounters in progress in the woods.

All this goes on against a background of related plant life, and Dr. C. H. Gimingham of the Botany Department of the University of Aberdeen, has skilfully outlined the amazing variety of flowers that flourish beside the trees all the way from the seashore to the alpine summits. Dr. Adam Watson, of the Zoology Department, likewise tells us about the animals and birds that have a similar striking diversity, from mountain hares and ptarmigan on the summits, to the pheasants of the lowland woods. The landscape itself, still being actively moulded by the wayward rivers, is built up of a great variety of rocks old and new, from granite to blown sand, and Dr. W. E. Fraser, of the Geology Department, proves a skilful guide to their distribution and characteristics.

The saying that the people make the country is nowhere more true than here in the North East, where successive generations have tamed the hills, the ancient forests, and the swamps to produce some of the richest farming regions in Britain. Fortunately for the historian, they have left a wealth of enduring monuments – stone circles, hill-top forts and mediaeval castles – to record their progress and ways of life, and these remarkable features are ably described

by a leading archaeologist, Dr. Douglas Simpson. More potent than monuments of stone, the living speech of the people has found expression in ballads and poems, and a selection has been made from this countryside's rich store of literature, both old and new, including the intensely regional poetry of Miss Marion Angus.

To bring a picture of the North Easts' scenery and characteristic old buildings to the eyes, Mr. David Walker has travelled throughout the woods with his sketch book in hand, and his drawings are supplemented by Mr. Lennox Paterson's cover design and Mr. Marc Sales map. The photographs, by several skilled hands, have all been taken recently with this guide book in view.

During the preparation of this guide book it has been my pleasant task to wander into every glen, strath and forest that it describes, to follow the course of every burn and river, and to visit most of the historic buildings. Whether the reader knows the land already or is exploring it for the first time, he may feel assured that its grandeur, the whole year round, will richly reward his travels. Here the forests have much to give us all, both as beauty and in timber, and the knowledge that our contributors and my colleagues on the staff of the Forestry Commission have assembled here will assuredly add to the pleasure you can gain through exploring them.

Felling Scots Pines at Alltcailleach

The larch tree's a lady
With long green sleeves,
Swinging in the meadow
Where she weaves and weaves
Silken soft coverlets
Spun with gold seams
Sleep and you'll dream there
The dream of all the dreams.

Marion Angus

THE FORESTER'S TASK

BY H. L. EDLIN

NORTH EASTERN SCOTLAND has a long and rich tradition of forestry skill. This was first developed on the many private estates, where it still continues, while since 1919 the Forestry Commission has been taking an ever-increasing part in the planting and tending of woods in this region. This article describes the main jobs done by the forester – the man on the spot in charge of a forest or the woodlands of a private estate.

In this part of the country he will be mainly concerned with coniferous trees, which yield softwood timber. The broadleaved trees, or hardwoods, are found here and there in small remnants of the native woods, and are important in the policies and shelter-belts near the big houses, but nowadays they are seldom planted for timber hereabouts. Nearly all of the better lowland grounds which once bore natural forests of oak, ash, Scots elm, alder, birch, willow and aspen poplar, has been cleared for farming. Two broadleaved trees have been introduced for estate planting on a large scale – the beech from Enlgand and the sycamore from Central Europe. Both have yielded some good timber, but their main use in the North East today is for landscape and shelter planting.

The coniferous trees planted for timber production all have narrow needle-like leaves and bear cones, and at first sight it is not easy to tell the different kinds apart; but a few simple hints will help.

The only native kind is the Scots pine, *Pinus sylvestris*, which forms the magnificent natural forests of Glen Tanar, Ballochbuie and Mar along the upper reaches of the Dee. It is an adaptable tree, and its timber, which yields the 'Baltic redwood' of international commerce, has been esteemed ever since the first logs were floated down the Spey and the Dee. So, although its rate of timber production is only moderate, it is still widely planted. All the pines bear their needles in groups of two, three or five; in the Scots pine there are always *two* per group; they are bluish green and quite short, and these characters, together with the orange-red upper bark of the trunk, are good distinguishing marks.

Two foreign pines are planted on a commercial scale. One of these, the Lodgepole pine, *Pinus contorta*, comes from British Columbia, where its straight stems were used for the lodges or wigwams of the Indians – hence its name. It looks very like the Scots pine, but can be recognised by its mid-green needles (lacking any hint of blue), its fine-grained bark which is grey (never red), and the small sharp prickles on its cone-scales. It grows faster than the Scots pine, and thrives on poorer ground in more exposed places. The Corsican pine, which can easily be told by its long twisted grey-green needles, is occasionally planted in lowland woods near the coast.

The spruces can always be told from other conifers because their needles are set singly on little pegs, which persist on the twigs after the leaves fall. On ground which suits them they are often preferred to the pines because, over a given spell of years, they yield more timber. The Norway spruce, *Picea abies*, which has mid-green needles with bluntish points, has been grown on estates for over two hundred years. The Sitka spruce, *P. sitchensis*, has bluish-green or silvery-green needles with really sharp points, and comes from

Alaska and British Columbia. It grows fast and resists exposure to the sea, and has done well on the exposed hump of Buchan.

Larches differ from most other conifers in having deciduous needles which fall every autumn; nearly all other conifers are evergreen. Larch needles, moreover, are grouped in clusters of twenty or more. Larches grow quickly in youth but do not yield very heavy crops of timber; however, this timber is remarkably strong and its heartwood is naturally durable, so they are valued for estate fencing and repairs, and also for the planking of fishing boats. The European larch, *Larix decidua*, has pale green needles and straw-yellow twigs; the Japanese larch, *L. leptolepis*, has bluish-green needles, russet twigs and cones with reflexed scales. There is a hybrid between them, *L. eurolepis*, which was first discovered at Dunkeld in Perthshire; it grows faster than either parent.

Several other conifers are sometimes planted commercially, the commonest being the Douglas fir, *Pseudotsuga taxifolia*, which has needles set singly, *not* on pegs, and long brown slender buds.

At least nine-tenths of all the trees now planted in the North East belong to the eight kinds named above, but nowhere will you find great new forests composed wholly of any one sort. It is part of the forester's skill to be able to assess the suitability of each stretch of land for each kind. For example, he may put pines amid the heather, larches among the bracken, and spruces on grassy or rushy slopes. But there are no simple rules; he must judge his ground by long experience, otherwise his crops will fail. This means that these forests have all the charm that comes from variety of scene and tree species.

All the coniferous trees are raised from seed, and foresters today are very careful where they get their seed from. That of the Japanese larch, the Sitka spruce, and the Lodgepole pine, is usually imported – from regions with a climate not unlike our own. Seed of the other five kinds is mainly home-grown, because trees of Scottish origin have been found to grow best. Many of the best plantations of trees in the North East have been earmarked as 'elite stands', or seed sources, and some outstanding 'plus' trees have been selected for tree breeding work; much of this is done at Newton Nursery near Elgin.

The Forestry Commission has only a few small tree nurseries in our region, because it draws most of the young trees it needs from two large nurseries just outside it; one of these is at Newton and the other at Ledmore, near Perth. But within the region there are several big 'trade' nurseries, notably at Fochabers, Aberdeen and Forfar, which sell trees to private estates, while many estates themselves grow substantial quantities of young trees for their own use or for sale.

Nursery work starts with the seedbed, a raised band of well-prepared soil, 3 feet 6 inches wide, on which the small seeds are sown each spring. Before sowing, the seeds are dusted with red lead to discourage mice; after sowing they are covered with coarse sand to conserve moisture without 'caking', and to shield them from birds; just before the seedlings emerge, the beds may be sprayed with a mineral oil which checks weeds. Seedling trees are very small, growing only a few inches in their first year, and often they have to spend two years in the seedbed. All this time they are carefully weeded and much of this work is done by girls.

Even then the seedlings are not big enough for the forest so, during the first or second resting season after they were sown, they have to be transplanted. Transplanting, also called 'lining out', gives each small tree more room in which to grow, and it also obliges it to form a bushy root system, which is what it needs to start growth under the harsher conditions of the forest. For such planting, the forester needs transplanted trees from 9 inches to 2 feet tall. These take at least two years, and often three or four years, to grow, but because they are raised by the thousand they only cost a few pence apiece.

While the young trees are being raised in the nursery, the land that is to receive them is being made ready. This land is of two kinds; some is former woodland that needs replanting, while some is hill ground, peat bog, or moorland that has been found unprofitable as rough grazing land. Agriculture naturally has the first claim to all the better ground. The area under tree crops in this part of the country is steadily increasing because many owners are finding forestry the most profitable use for their uplands, while the Forestry Commission is always ready to acquire suitable ground for its own afforestation programme. The highest altitude at which timber can be profitably grown here is about 2,000 feet, and then only in sheltered glens; the Grampian summits on the west must perforce remain treeless for climatic reasons.

Experience has shown that most ground in this region benefits from some form of ploughing before planting. So you will see big crawler tractors at work pulling heavy ploughs that dig furrows at 5 feet apart, the usual planting distance. On 'hard' ground, tine ploughs with points of very hard steel cut through the 'moor-pan' that lies below the surface. On 'soft' peaty ground other types of plough cut open drainage channels, and provide long slices of turf through which young trees are planted. Low-lying land may need draining – by hand or machine – as well as ploughing.

Most new forest areas lack roads, and therefore at an early stage the forester surveys the best lines for new roads to follow, so that

lorries can approach all parts without facing sharp curves or steep slopes. These road-traces, as they are called, are left unploughed and unplanted, but sooner or later the actual roads are built. This constructional work is carried out – whether it be in Commission forests or on private estates – remarkably quickly and cheaply. High-powered bulldozers and graders pare off the heather and shape the 'formation' of the road. Then a power-driven excavator arrives to dig gravel from one of the many old glacial moraines, and a small fleet of lorries spreads this as an ever-advancing road surface.

Young trees are very vulnerable to attack by grazing animals, so before any can be planted the ground must be securely fenced. Farm livestock must, of course, be excluded, and so must rabbits. The numbers of rabbits were greatly reduced by the myxomatosis disease in 1954, but in most places it is still found necessary to set up a barrier of wire netting against them; this has to be 3 feet high, with another 6 inches turned outwards at the foot to check burrowing. Over towards the high Grampians the red deer form a real menace to young trees when they come down from the high ground in snowy winters. So many miles of deer fencing, 6 feet high, have had to be built to check their incursions.

Fencing, however, does not usually exclude the brown hare or the mountain hare, both of which are great jumpers; while the shy and nimble roe deer usually finds its way into the best-fenced woods. Therefore the forester is occasionally obliged to control their numbers by shooting, though naturally he stops short of extermination. Two attractive and fascinating game birds occasionally prove harmful locally. These are blackgame and capercailzie, both of which have the annoying habit of pecking off and eating the buds and leading shoots of conifers. Again the forester must sometimes use his gun if he is to succeed in raising a crop of young trees through their vulnerable early stages, but again he tries to control the creatures concerned without exterminating them. Otherwise the trees have few major enemies; red grouse, pheasants and partridges do little real harm, and though the risk of insect plagues is always present, serious outbreaks have been few.

The actual planting of the trees on the prepared land is done during autumn, winter and early spring, at such times as the ground is free from snow and frost. The men, who carry the young trees in canvas bags slung from the shoulder, work surprisingly quickly; often each man will put in one thousand trees in a single day. There are two main methods – *notch* planting whereby the trees' roots are thrust into a narrow vertical notch cut with a mattock or specially shaped spade, and *turf* planting, used principally for spruces on peaty soil, in which the roots are spread out horizontally just below

Paradise Wood, beside the River Don on the Monymusk Estate.
Planted by Sir Francis Grant in 1741

Tree planting in Durris Forest

Road-making in Glen Livet Forest

an overturned turf or slice from a ploughed furrow. Nearly all the trees planted take root; any failures are made good in the next planting season.

For the first few summers after planting, grass, bracken, heather or other weeds may spring up and threaten to smother the young trees. Where this happens, the forester sends round a weeding gang, who trim back the weeds with a sharp reap-hook, to free the young trees. But as these are soon growing taller by a foot or more each year, they are out of danger in a few years' time.

From an early stage the existence of the young plantation is threatened by fire, and although the risk lessens as the crop grows older, it is always present. That is why you see fire warning notices at every forest, and also stacks of fire beaters which you should not hesitate to use if you come across any unattended outbreak. There are many other ways in which the forest staff seek to reduce fire damage. Each large forest block is broken up by roads, which form breaks and give quick access to any affected area; at the start of each road you will see an 'F.R.P.', or Fire Rendezvous Point number, which helps the fire brigade, and other fire fighters such as forest workers or troops, to concentrate quickly on any reported blaze. Around most blocks, and especially alongside roads or railways, you will see some kind of firebreak – a strip of green, uninflammable grass, a band of bare earth, or a belt of Japanese larches – trees that provide fire-resistant conditions at a fairly early age. Here and there streams are dammed, or pools are dug, to provide small reservoirs of water.

Success lies in prompt reporting of suspicious smoke, and therefore fire towers or look-out huts, which are constantly manned in dry weather, have been set up on hilltops. These are linked to the Forester's office by telephone, or sometimes by short-wave radio. Most of the Land Rovers – those versatile vehicles used to carry the forester, his workmen, and his tools and stores round the woods – are now equipped with small but efficient pumps for spraying jets of water on to the smaller fires. If this 'first-aid' treatment is not sufficient to quell them, it does at least check them until the more powerful equipment of the county fire brigades can be brought into play.

Except for a constant watch and ward against fire, insect pests and the harmful animals that may enter across damaged fence-lines, the young trees need little attention for the first twenty years after planting. Sometimes their side branches are pruned-off or 'brashed' with the idea of easing movement through the wood and preparing the poles for subsequent sale, but this is not always done here in the North East. Occasional unwanted trees, such as seedling birch or

sallow willow, may be cleared out in the process called 'cleaning'. About the twentieth year after planting, however, the forester has to assess the plantation for its first proper 'thinning'.

Though some trees are sure to have died, the steady growth of the remainder, outwards as well as upwards, will by then have begun to deprive each separate tree of sufficient space for its future development. Some must come out. Originally, at a 5-foot spacing, there will have been 1,750 trees on each acre; losses may have reduced this figure to 1,500, and now a further 300 or so must be taken out. By a skilful marking the forester picks out the poorer trees to be felled first, leaving the better ones to increase in value. Later on – from three to five years later – there will be another thinning, and this planned removal of the less desirable trees will go on until the time – perhaps seventy years after its first planting – when the crop is adjudged mature. Then the survivors, the cream of the crop, will be brought down in a final felling; this will be followed by the replanting of the cleared ground, so completing the cycle.

A substantial part of all the timber grown – roughly two-fifths – comes out as thinnings, and so it is very important that they should be harvested economically and sold at a fair price. As a rule, the trees marked for removal are sold, as they stand in the wood, to timber merchants who undertake to cut and remove them within a set period. Occasionally the first stages of the work are done by workmen engaged by the Forestry Commission or the woodland owner, but in all cases the steps taken are similar.

The trees selected for removal are first felled, either with a bow-saw, a two-handled cross-cut saw, or a motor-driven power saw. The larger trees have to be 'laid-in', at the start; this means under-cutting with a stout felling axe. After felling, the side branches are speedily cut away, or 'snedded', with a light hand axe, and the pole is 'topped'. The next step is to drag the pole, now free of branches, to the nearest road, and it is at this stage that the sturdy horse holds its own. Horses still provide the cheapest means of bringing out small poles, in groups or singly, though tractors are also used and are needed for the bigger timber.

Once the roadside is reached the lorry takes over, to deliver the material to its final destination. Many lorries are now equipped with small power-driven hoists to lessen the labour of loading. Big logs have to be loaded by a crane or heavy lifting tackle on to specially constructed timber waggons.

Often the poles are 'processed' to some degree at the roadside before leaving the forest. If they are to be used as pit props, as creosoted fencing material, or for certain kinds of pulp, the bark is shredded off by ingenious power-driven machines that force them

against rotating knives. Either a hand saw, or nowadays more likely a small motor saw-bench, may be used to cross-cut them into defined lengths – each with its appropriate degree of stoutness – for pit props, pulpwood, or various classes of stakes and rails.

Despite the various new mechanical aids, tree felling and the handling of forest produce remain extremely hard work. But the men are encouraged to secure a high output by piecework wages, and there is no lack of recruits for this highly skilled employment

Let us follow the timber we have seen grown a little further, and consider how it is used. Much goes no farther than the neighbouring fields, to be used by the farmer as fencing stobs and rails; if creosoted, or otherwise preserved, these have a long service life. Rather stouter stems are used by the Coal Board as pit-props, or else by the Post Office as telegraph poles. Much material is cut into 6-foot lengths for distant factories that manufacture chipboard, fibre-board, wood wool, or newsprint for the daily papers. The larger poles and logs cut from mature trees go to the sawmills, of which there are both a large number and a considerable variety in the North East. They range from small benches with circular saws, which can be moved if required from one estate to another, to big establishments using bandsaws and other elaborate equipment. Two of their main products are railway sleepers and boxboard material, which latter is resawn and assembled into boxes for fish, and a wide range of other goods, at big factories in Aberdeen. They also produce beams and boards for building construction; this local-grown material is already widely used for estate repairs and farm buildings, and to some degree in house building. Finally, there are certain timbers that are valued for special uses – particularly oak for the keels and ribs of fishing craft, and larch of the highest grade for ships' planking.

From this brief review it will be seen that the forester must be a man of many skills. He must know his trees and the soils and situations that suit each kind. He must understand how to prepare and fence the ground, and to control the various pests that threaten his crop. He must be a nurseryman able to raise the trees he needs through their delicate early stages, and also a fireman able to handle wireless sets and motor pumps, and plan the strategy of fire control. Finally, he must have mastered the techniques of tree feeling and timber transport, and appreciate how each class of timber will finally be used by its purchaser.

Nearly all the men who supervise the work in the Commission's forests, and a proportion of those on private estates, too, have learned their craft at one or other of the Commission's Forester Training Schools, which give a two-year course, free of charge, to promising

applicants. One of these schools stands beside Loch Faskally in Perthshire, not far from our area. The professional forest officers who supervise them are trained at Aberdeen and other universities. In such ways is the North East's long tradition of forestry skill maintained and handed on.

Braemar Castle

Wood of the birches,
The pretty shy trees in you,
Silver and grey, with the
Kind little breeze of you,
All the length of the day,
There is nothing they say
But what I would hear
In the peace of you—peace of you.

Marion Angus

AROUND THE FORESTS OF DEESIDE AND THE NORTH

BY H. L. EDLIN

STARTING from Aberdeen, the visitor seeking the forests and woodlands of the North East has a choice of many attractive routes. After a brief glance at the city's place in the development of Scottish forestry, we will take each in turn, beginning with Deeside,

proceeding north to the Don, Deveron and Spey, and then turning southwards towards Angus and Dundee.

ABERDEEN

The granite city and seaport of Aberdeen is the centre for the activities of the Forestry Commission in the North East, and the home of a university which grants forestry degrees. In and around it are big wood-using industries associated with shipping, fisheries, farming, and the paper trade. Also at Aberdeen is the Macaulay Institute for Soil Research, founded in 1930 by Dr. T. B. Macaulay, who spent most of his life in Canada but was a native of Lewis. He wished to help the people of his native land by establishing this research centre for the study of soils, including peat soils which cover so large a part of the Highland region; some of these soils are now used for the growing of forests.

The local firm of Benjamin Reid, which maintains an 80-acre nursery at Pinewood Park on the Countesswells road, is a large and long-established supplier of the young forest trees needed by the thousand on private estates all over Scotland, and it also deals in tree seed. Two members of this firm, the brothers Duthie, invented the transplanting or lining-out board that is now in use, in one form or another, in most forest nurseries throughout the British Isles. This transplanting board is a simple device which actually embodies two boards hinged together, with suitable arrangements for holding about sixty small trees, all at the right distance apart and with their roots correctly adjusted for depth of planting. It enables the workers to plant sixty or so trees at one time, instead of having to tackle them laboriously one by one. Over fifty people are employed in these big nurseries which may hold, at any one time, as many as 20 million small trees.

Aberdeen has several sawmills and box-making plants which make containers, mainly for the fish industry. Wooden boxes have many advantages over alternative materials for the transport of the big fish catch. Being poor conductors of heat, they hold ice well, and keep the perishable fish cool for a long period. Two kinds of fish boxes are used – a robust and durable one for handling the catch between boat and market only, and a lighter, cheaper one for despatching fish to distant towns, serving for one journey only. From the same factories comes a wide variety of packing cases and export crates – mainly for bottled goods such as whisky, beer, soft drinks, and drugs, but also for many other kinds of manufactured goods and foodstuffs.

Home-grown trees provide most of the raw material for this big box-making industry. They arrive as round logs, and are speedily

sawn into thin boards which are cut to final shape and assembled into boxes with the aid of ingenious machines for grooving, dovetailing, glueing, wiring, and nailing. Despite all this mechanisation several hundred people are employed.

Shavings and sawdust from locally grown trees are used to provide smoke for 'kippering' fish, and some of the herring catch is still packed in wooden barrels. The paper mills around Aberdeen rely on imported wood pulp and esparto grass as their raw materials, and Scottish timber does not, as yet, enter into their operations.

The country comes in close to the heart of Aberdeen, and at Hazlehead, only a short bus ride from the city streets, there is a large park and golf course surrounded by plantations. In earlier times the townsfolk had a still closer connection with the woods, for King Robert the Bruce, in 1313, granted them a charter which included rights over the Forest of Stocket, which then reached almost to their doors between Bucksburn and Hazlehead. This charter confirmed to the burgesses and community of the burgh of Aberdeen the care and custody of the whole forest, but the King reserved the greenwood and the game. In 1319, the King granted a Feu Charter which extended the rights of the burgh in return for a yearly payment. A translation of the first of these two documents into modern English appears below:

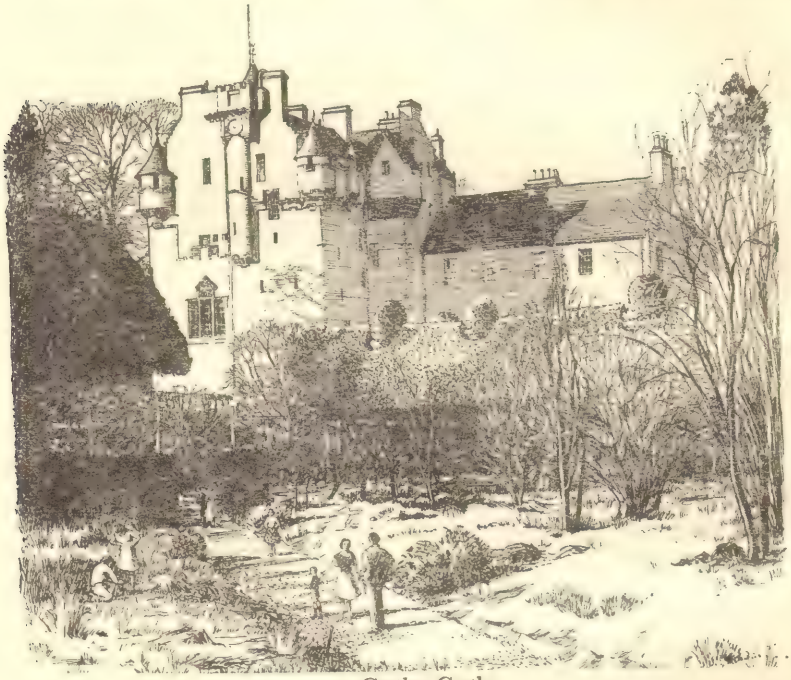
King Robert I. grants to the burgesses of Aberdeen the custody of his forest of the Stocket. 24th October (1313)

'ROBERT, by the grace of God King of Scots, to all good men of his whole land, greeting. Know ye that we have given, granted, and by this our present charter confirmed to the burgesses and community of our burgh of Aberdeen the care and custody of our whole forest of the Stocket with the pertinents; to be held and had by the said burgh, burgesses, and community thereof, and by their heirs and successors, by all their right meiths and marches, with all the privileges, conveniences, and easements belonging or which shall in future belong, whether by law or by usage, to the said forest; reserving for ourselves only the green wood and the game. We also grant to the same our burgh, to the burgesses and community thereof, and to their heirs and successors, that no justiciar of our forests and no other person of our kingdom, of whatsoever condition or rank he be, shall interfere with, or take cognisance of the neglect of our said forest, save our own person and our Chamberlain for the time being: strictly forbidding anyone to make bold, in despite of this our grant, wrongously to trouble the same burgesses or community, their heirs or successors, on pain of our full forefeiture. In witness whereof, we have ordered

our seal to be appended to our present charter. Witnesses: Edward of Bruce, Earl of Carrick, and Lord of Galloway, our brother; David, Earl of Athole, our Constable of Scotland; Thomas Ranulph, Earl of Moray, our nephew; John of Menteith; Gilbert of Hay; Alexander of Meyners; and Robert of Keith, our Marischal of Scotland – Knights. At Dundee, the twenty-fourth day of October, in the eighth year of our reign.'

THE DEE VALLEY

The basin of the great River Dee, reaching from Aberdeen inland for ninety miles to the high Cairngorms, forms one of the most richly-wooded regions of Scotland, and one that has kept, better



Crathes Castle

than any other, the original character of its natural forests of Scots pine and birch. Woods or plantations are almost continuous, on both banks of the stream, from Aberdeen right up to Inverey, above Braemar; most remain in the hands of individual owners, who maintain high standards of management; so there has been little need for the Forestry Commission itself to undertake extensive operations, though it has established five forests on or near Deeside.

A number of sawmills, run by timber merchants, are continuously in operation along the valley; some are situated near the small towns, such as Banchory and Ballater; others, of a more temporary character, are dispersed through the woods. The temporary or so-called 'portable' sawmill is a peculiarly Scottish institution, seldom seen south of the Border. Set up to run for a few months near a limited supply of timber, it is traditionally operated by men who either live in bothies or bring their families to caravans or temporary huts. Now that more systematic management of the woods, with more regular fellings, is developing, it is tending to disappear; but it has played a useful part in emergencies caused by war needs or windblows.

A typical permanent mill is that at Silverbank, near Banchory, owned by the firm of Cordiner, which produces box-boards, building material, and fencing and mining timbers from home-grown logs. Many estates also run sawmills, using their own timber for local needs such as farm fencing and building work.

THE NORTH SIDE OF THE DEE

In this swift survey of the Deeside woods we will take first the northern side of the river from Aberdeen up to Braemar and beyond, returning down the southern bank. There are many small shelter-belts around the farms and mansion houses east of the city, but the first considerable woods we encounter on the northern side are those in the Commission's ownership called Countesswells (a section of Kirkhill Forest) lying north west of Cults. These form a group of twelve, close to Countesswells House; they were acquired for re-planting after the 1939-45 war, and their combined area is nearly 800 acres. While conifers, including Scots and Lodgepole pines, larches, spruces, and Douglas fir have accounted for most of the new planting, room has also been found for broad-leaved trees, including ash, beech, red oak and birch. Farther to the north west, around Dunecht on the road to Alford, Lord Cowdray's extensive Dunecht Estate includes a large group of extensive and well-managed woodlands.

The National Trust for Scotland owns extensive woodlands of oak, beech, pine, spruce and larch on the Crathes Estate, east of Banchory, gifted to the nation in 1951 by Sir James Burnett of The Leys. The National Trust property includes Crathes Castle, a wonderfully preserved example of sixteenth-century Scots baronial architecture, which has delightful gardens and wooded policies that attract thousands of visitors each year.

There are several privately owned estates lying to the north of the Dee, between Banchory and Aboyne, which have extensive areas

of woodland; noteworthy are those of Learney near Torphins, Kincardine Lodge close to Kincardine o' Neil, and Coull, north of Aboyne. The woods of Blelack, north of Dinnet, are noted for their fine strain of Scots pine, and some of these trees have been selected as 'elite' ones for breeding better strains. Above Logie Coldstone on either side of the road from Dinnet to Strathdon, a big programme of afforestation on ploughed moorlands is under way on the estate of Tillypronie.

Let us diverge to the north for a few miles to explore the outskirts of the Hill of Fare, a prominent landmark 15 miles west of Aberdeen, which rises to 1,545 feet. Its southern slopes were the scene, in 1572, of the Battle of Corrichie, where Mary, Queen of Scots, defeated the Earl of Huntly. Now, in more peaceful times, large areas are being afforested by private woodland owners. On its northern flanks, and in full view of the Aberdeen – Tarland road, stands Midmar Forest, established by the Commission about 1926, and now extending to 1,300 acres above picturesque Midmar Castle. It is a wholly coniferous forest, with Scots pine, European larch, and Norway spruce as the leading trees; the older plantations are now being thinned. Farther west, in the long glen above Lumphanan, and on the heathery braes of Craiglich (1,563 feet), the Commission is forming new plantations of pine and spruce, which form part of its Cushnie Forest.

At Cambus o' May the valley of the Dee loses the open character of a strath, and becomes more like a true Highland glen, for the mountains now hem it in on either side. To the north stands Culblean, 1,567 feet, the scene of a battle between the forces of Mar and Atholl during the Second War of Independence in the year 1335. Then comes Morven, 2,862 feet, the second of a long ridge that runs through Ben Avon, 3,843 feet, and Beinn a' Bhuird, 3,924 feet, to culminate in Ben Macdhui, which at 4,296 feet is the second highest peak in all Britain. On the south the scene is dominated by 'dark Lochnagar', soaring to 3,786 feet on the south side of the great Balmoral deer forest. East of this, a long chain of rounded hills, with elevations between 2,000 and 3,000 feet, bounds the valley for 25 miles; while to the west of Lochnagar similar hills run for another 25 miles before the farthest headwaters of the Dee are reached on remote Braeriach. At Ballater the railway ceases, but the north Deeside road continues past long plantations, mainly of Scots pine, as far as the village of Crathie, close to the Queen's residence of Balmoral Castle.

From Crathie westwards there is but a single road, which takes first the north bank, then the south, on its way to Braemar, the highest township in the glen. This road winds past the huge pine

forest of Ballochbuie, which is owned by the Queen and forms one of the finest remaining stretches of the native Caledonian pinewoods; it owes its preservation to the interest and intervention of Queen Victoria. Ballochbuie was one of the forests studied by Sir Arthur Tansley for his classic monograph on natural plant associations, entitled *The British Islands and their Vegetation*, and along with other native pinewoods has been described in detail by Professor H. M. Steven and Dr. A. Carlisle in their recently published book *The Native Pinewoods of Scotland*. Some of the pines reach 80 feet in height, with girths up to 10 feet, and these are commonly around 200 years old or more. The ground cover of this forest is largely of heather, of blue-fruited blaeberry (*Vaccinium myrtillus*) and the red-fruited cowberry (*Vaccinium vitis-idaea*) while there are many natural birchwoods in the valley. The woodlands on the Balmoral Estate of Her Majesty the Queen, natural and planted, extend in all to some 2,500 acres. The floor of the valley is here around 1,000 feet above sea level, and the woods extend up the southerly braes to an elevation of 1,750 feet.

Opposite Ballochbuie, around Invercauld House and picturesque Braemar Castle, stand the woods of the Invercauld Estate, which extend to 3,000 acres, again mainly of pine.

Above Braemar continuous woods of pine and birch extend on both sides of the Dee for 6 miles to Inverey and the Linn o' Dee. But beyond the Linn only an odd pine, birch, or rowan is to be seen along the river's course, through wild moorlands, from its remote source in the Pools o' Dee, near the summit of the Lairig Ghru pass. Two of its tributary streams have woodlands at remarkably high elevations in their glens, approaching 2,000 feet. One is the River Lui and its tributary the River Derry, with woods around Derry Lodge, and the other the Quoich Water; 'derry', from Gaelic *doire*, a grove, suggests the presence of woods from the remote past. The Nature Conservancy is now engaged on studies of the natural regeneration of the Derry Lodge Woods.

Captain A. Ramsay, of the Mar estate on which they lie, has supplied the following note on their history:

> 'Omitting the earlier millenia of the life of the Glen Derry Pinewood, we will start with the scanty records of the greatest enemy of the forest – man. Before 1621 there is little reliable record of this pinewood, and not much more since, until 1959. Early human settlements in Deeside were virtually non-existent above 800 ft., being centred on the best farm areas, e.g. the Howe of Cromar. The woods served only local needs until the late 17th century, being used mainly for hunting. In 1621 James VI asked the Earl of Mar to send pine seed from upper Deeside for use in

England. A sawmill was established at the mouth of Glen Quoich in 1695, where there were annual fellings as far as accessible. In 1716 the Earl of Mar was forfeited and much of the Earldom was bought by Lord Braco in 1735. Dalmore (i.e. the Dee valley west of Braemar) was described in 1759 as 'distinguished by the finest natural pines in Europe, both in respect of the size of the trees and the quality of the timber. . . . It is preferable to any brought from Norway. . . . When the river is swelled with rains, great floats of timber are sent down into the low countries': trees 'from 80 to 90 ft. high without a lateral branch and 4½ ft. in diameter at the lower end were sold at 6 guineas each'. Before 1776 a large part of the Glen Derry and Luibeg woods had been felled, the logs being floated down to a sawmill below the Linn o' Dee: there were many dead, dying and rotten trees then, perhaps as a result of fire. Some of the crofts in Glen Lui had been abandoned before 1776. The present trees in Glen Derry probably grew up after the fellings before 1776 and there is little doubt that, in common with other native pinewoods, they have survived mainly because of their inaccessibility. In the last war a sawmill was again set up on the site below the Linn o' Dee, but the onslaught of the Canadians was directed mainly against plantations rather than natural woods.'

AMONG THE HIGH CAIRNGORMS

It is often surmised that the existence of woods at such high levels is favoured by their 'relative elevation'; that is to say, these Deeside examples are 'low-lying' in relation to the great peaks of the Cairngorms that tower up around them to heights of 3,000 or 4,000 feet. The exact values of such supposed shelter effects have never been worked out, but studies by the late Professor Anderson of Edinburgh University indicate the general severity of the climate of Upper Deeside. He estimates the actual growing season at Braemar as 155 days in the year, as contrasted with 208 days for Helensburgh on the Firth of Clyde; at the 2,000-foot level, he suggests, it may be as little as 118 days. Frost is recorded, in an average winter, on 100 days of the year, as contrasted with 25 to 50 days on the west coast. Snowfall is heavy, and altogether these mountainside trees of the Upper Dee endure most rigorous conditions, whatever shelter they enjoy from the mountains.

For anyone save a hardy hill walker, ready to face a 30-mile tramp across the Grampians to Badenoch or Atholl, the upper course of the Dee presents a dead-end; and in winter even he would find the few passes snowbound and often impassable. From Braemar the grand hill road over the Devil's Elbow, 2,199 feet high,

provides the only southward route from Deeside to Blairgowrie, Perth and the South; while from Crathie the Lecht road climbs to 2,090 feet on its way to Tomintoul and the north. But we will return eastwards, this time taking the southern side of the Dee from Crathie to Aberdeen.

THE SOUTH SIDE OF THE DEE

On the whole this is the richer of the two sides in woodlands, for here as in so many other glens the closest settlement and the main clearance of woodland have taken place on the north bank, intrinsically warmer and more attractive than the southern side which has north-facing slopes falling away from the sun. So on the north we have the major road, the railway, and the towns of Ballater, Aboyne, and Banchory; but on the south bank the pinewoods of Ballochbuie, Birkhall, and Glentanar.

Alltcailleach Forest (pronounced *Altcaley*) around Ballater was started by the Commission in 1932, and now extends to 3,800 acres. Part of the land was leased from Royal estate of Birkhall, in Glen Muick, and still carries some plantations established in the nineteenth century by Queen Victoria, at the suggestion, it is said, of Albert the Prince Consort. From the Dee, the forest runs southwards along the steep flanks of the glen for six miles, sometimes on both sides of the stream, and sometimes only on the west. A fine view of the young woods is obtained by following the by-road past the turbulent foaming falls of the Linn of Muick; the forest is left when the open moor is gained, but the pinewoods of the Birkhall Estate, owned by the Royal family, continue up the far side of the stream to Spital of Muick, the Queen's shooting lodge. Here the road ends, but beyond lie Loch Muick, the start of the Capel Mounth hill walk, and one of the approaches to Lochnagar, whose steep rocky summit, often snow-clad, dominates the surrounding hills.

Operations at Alltcailleach have included the tending of the older plantations, the replanting of large areas felled during the two world wars, and the first planting of bare hillsides. Scots pine is the principal species grown, but there are considerable acreages of European larch and Norway spruce, and smaller areas of Sitka spruce, Douglas fir, Lodgepole pine and the European and Japanese larches. Thinnings have long been in progress in the older woods, which yield sawmill timber, pitprops, stack poles, railway sleepers, and fencing posts. The forest has its own sawmill, and also a creosoting plant where fence posts and gates for use on the Commission's woods and holdings throughout eastern Scotland are given preservative treatment.

A feature of these Alltcailleach plantations is their high elevation;

the Dee itself is here 700 feet above the sea, and several woods approach the 1,700 foot contour, on the slopes of the Coyles of Muick, a striking ridge of conical hills. The fire tower that guards the plantations stands as a landmark on their flanks. Another portion of this forest, consisting mostly of young pinewoods, stands on Pannanich Hill south east of Ballater, while there is an outlying pinewood on Creag na Spaine, on the high road midway between Balmoral and Braemar.

From Ballater we follow the Dee downstream for 10 miles to Aboyne, passing on our way the plantations around Dinnet. South west of Aboyne lies the great Forest of Glentanar, situated in the long glen of the Water of Tanar, and owned by Lord Glentanar of Glen Tanar. It covers 5,100 acres in all, and its greatest length is 7 miles. The forest consists of natural pinewoods, plantations of this same native Scots pine, larch and often conifers, natural birchwoods, and natural oakwoods, all under efficient and enthusiastic management. There are also extensive policy woods around the mansion, and a large arboretum or collection of rare specimen trees, which includes some 60 different sorts of conifers.

The old pinewoods of Glentanar have also been the subject of intensive study by the Forestry Department of Aberdeen University, and are described in *The Native Pinewoods of Scotland*, mentioned above. They lie at elevations of 700 to 1,000 feet, on a granite subsoil, and include junipers, rowans, and birches amid the pines; the ground cover consists of heather, blaeberry, cowberry, and mosses. The oldest trees are 300 years old, while there are some good mature stands aged around 150 years. The natural regeneration of young seedlings was checked in the past by fire and the unchecked browsing of red and roe deer; but the woods are now well protected and almost everywhere clusters of young pines are springing up in gaps and along the fringes of the older woods. The timber produced is hard and resinous, the older stems showing a high proportion of red heartwood.

The pines show considerable variation in habit, some having tall and slender crowns and others broadly spreading ones. Their bark varies also, that on some trees being ridged, that on others having the character of broad plates or else flakes; but it is believed that part at least of these differences depends on the age of the trees concerned. Nine different patterns of cones have been distinguished in *The Native Pinewoods of Scotland*, while there are also points of difference in the shape of the wings that carry the small seeds, and in the colour or pattern of the seed coats. Such variations are of value to tree breeders since they indicate separate strains that may be crossed in the hope of raising better or more vigorous offspring.

The following note on the history of this notable Forest has kindly been contributed by Lord Glentanar.

The Forest of Glen Tanar

'The Indigenous Pinewoods of Scotland, which collectively have come to be known as the Great Caledonian Forest, once stretched across Scotland from West to East and from Glen Falloch in the South to Strath Oykell in the North. In Time, it stretched back into the dim pre-historic past.

Fraser Darling has called its destruction 'the biggest effect man has exerted on the history of the Highlands'. This destruction happened within historic time, partly between A.D. 800 and 1100, and then from the fifteenth century till the end of the eighteenth, and latterly during the two Great Wars. The story of the many wanton ways in which these acts of destruction were carried out is too long to be told here. Only small remnants exist to-day; one of the most important of these is in Glen Tanar.

The indigenous trees here were birch, Scotch firr – to give it its old name – oak, aspen, alder and rowan.

Although in the eighteenth century tenants were encouraged to plant and protect birch trees, the first known large scale planting of trees (Scots pine, larch and broad-leaved species) in Glen Tanar took place during the second half of the nineteenth century on moorland below the native forest.

Timber of suitable size and quality was exported for shipbuilding and many other purposes.

Oak was used from Glen Tanar for the building of ships and it is recorded in 1797 that a ship entirely of oak taken from Lord Aboyne's woods was built in Aberdeen. It was called *The Countess of Aboyne*. Other records have shown that 'The first schooner *Scottish Maid* built in 1839 was the precursor of the great clipper ships and the *Glen Tanar* in 1842. In the construction of the last named the firm Messrs. Alex. Hall & Co. broke all records for speed in workmanship. The timber was floated down the Dee from Glen Tanar, then leased to Hall & Co. and in six weeks time the ship was completed, launched and sped on her way to America'.

Selective fellings were practised in early times, and sawpits can still be identified where the trees were manufactured by hand using the 'rug-saw' and the adze. The first reference to a sawmill in the district in known documents is in the year 1732, although sawmills were in use on Deeside farther west. It is contained in a contract between Lady Grace, Countess of Aboyne, and Peter Coutts in Ballmorrall, 'whereby he is bound to build, erect and rear up ane

good and sufficient weill-goeing Saw milne upon the water of Tanner near or adjacent to that part or place in the wood called the haughes of Allachie or any other place that shall be judged most convenient, which saw milne shall work with two sawes or blades'. The site of this mill can now only be guessed, but the first sawmiller, it was recorded, was one Archibald Grant.

Birch bark was a commodity of value in those days, probably for dyeing or tanning, and many sales are recorded.

It is remarkable to compare the difficulties under which timber operations were carried out in those days compared with the facilities we now have, with good roads and mechanical transport of all kinds. The inhabitants of Glenesk bought timber from Glen Tanar and dragged it home, which meant on the rough track over the shoulder of Mount Keen, rising to well over 2,000 feet.

Evidence of forest fires of the past can be seen as carbon layers in the soil profiles. Records of forest destruction by these fires include fires in 1688, 1719, 1726, 1748; the latter was recorded in the issue of the Aberdeen Journal of June the 14th and burned for 10 days. Then in June 1810 when 200-300 acres were burned. In 1820 a big-scale fire occurred in June which has been recorded by the late Mr. Anderson of Aboyne. In 1826 a great fire, said to have started on Lochnagar, eventually reached Glen Tanar through Glen Muick, but was put out before it reached the solid forest—only fringe trees were burned. In 1920, 1,362 acres and in 1956, 244 acres were destroyed in serious fires. The 1920 fire took 10 days to extinguish although hundreds of men fought it.

During the eighteenth century goats, cattle and sheep grazed the forest area. Towards the end of the nineteenth century it became a famous red deer reserve for sporting purposes. In 1938 a shield fence was erected which has allowed the deer population within the woodland area to be controlled.

For about 100 years prior to 1940 little Natural Regeneration of the tree species survived, and most of the leaf trees disappeared, except where protected.

Since 1940, however, the progress of Natural Regeneration has been encouraging, mostly on the forest fringe where grazing by stock is not concentrated. One can thus observe phenomena which must have been repeated over and over again during many thousands of years in the perpetuation of the great wood of Caledon – the 'shift' of the Scotch firr – being a light demander it must have seeded out to the natural tree limit, then when parts of the parent mass were destroyed by age, wind, or fire caused by lighting, the 'back-in' seeding process commenced. It is interesting to read in some notes recorded by the late Mr. Anderson of Aboyne that when his grand-

Timber hauling in the Glentanar Pinewoods

Hauli.g thinnings from a thinned stand of Hybrid larch in Drumtochty Forest

Bennachie Forest, looking towards the Mither Tap and Millstone Hill from My Lord's Throat Pass near Keig

Planting Douglas firs amid birches on a private estate on Deeside

parents first went to Glen Tanar in about 1809, where his grandfather Robert Whyte was Manager to the Earl of Aboyne: 'The quality of the trees was considered to be the finest and the wood was in great demand, many coming long distances to procure it. My mother told me that yearly, representatives of Seed Merchants came from England and collected the seed of the Fir trees, it being in great demand. Sheets were spread on the ground around some of the finest specimens and seed collected in this way'.

In recent times during the 1939–1945 war 3,200,000 cubic feet (Hoppus) of timber was felled for war purposes, and the gale of 1953 blew down just over 500,000 cubic feet. Most of this timber was planted from about the middle of the nineteenth century onwards, and was of easy access.

The remains of the Indigenous Pinewoods was spared. It is to be hoped that their progeny, propagated by nature, or with the help of man, will also be spared in years to come to carry on a noble line of very great antiquity.'

FROM ABOYNE TO THE SEA

As I rade doun by Brig o' Dye
And past yon hill o' broom
A maiden sang richt merrily
Just as the sun gaed doun.

'Its Cairn o' Mount is bleak and bare
And cauld is Clochnaben
And you will see the snow lie there
Alang the summer's end'.

Alexander Balfour,
1767–1829.

Aboyne, now an attractive holiday centre, was for long the centre of the Deeside timber floating industry. Logs were gathered there from the forests round about and built up into rafts which were floated down for thirty miles to Aberdeen, under the guidance of skilled and hardy oarsmen. This practice continued as late as 1881. Each raft was made by fastening the butt ends of two groups of logs together with ropes and ring dogs; the narrow tips of each group were then roped together to form a rough boat shape, having a narrow stem and stern.

Descending the Dee again we pass the woods of Balnacraig, Balfour, and Ballogie, amidst which there is a new Commission planting, and next cross the hills to the Water of Feugh, a tributary of the main river. The upper reaches of the Water of Feugh lie amid

the old Forest of Birse, anciently a royal hunting ground and still a deer forest. In its midst stands one of the small country turneries that were once frequent in glens, where burns supplied sufficient water power. Their craftsmen turners produced a surprising range of round, half-round, and built-up articles, made as a rule from the plentiful native birch timber, which is smooth, easily worked, and sufficiently strong. A standby of their business was the production of cotton reels, pirns and bobbins; other items were spoons, ladles, spirtles, rolling pins, darning mushrooms, broom heads, butter-prints, 'Scotch hands' for working butter, bowls, and platters – in fact all the woodware that was once the essential equipment for kitchen and dairy. For the farm there would be shafts and tool handles of all kinds, cunningly shaped from birch, ash, the plane tree or sycamore, or even the tough rowan. The built-up or stave woodware included buckets, and bickers or coggies, bound together so tightly within metal bands (or originally with willow withes) that they held water safely. Near Finzean the manufacture of sturdy buckets of Scots pine staves still continues. The Finzean estate, ancient home of the Farquharsons, has extensive woodlands with grand specimens of Scots pine and European larch.

Blackhall Forest lies around the pleasant town of Banchory in Kincardineshire, and extends to 4,900 acres. The main block is situated along the south side of the Dee, between Banchory and Potarch, rising boldly to the skyline of Scolty Hill, topped by a tower commemorating General Burnett of the Leys, and the Hill of Gouach (pronounced *Goch*) which is 1,100 feet high and carries the forest fire tower. Most of this land once formed part of the policies and plantations of Blackhall Castle, which stood close beside the turbulent Dee, but has now been demolished. During the 1939–45 war, hundreds of acres of fine Scots pine, larch, and spruce timber on the Blackhall estate were clear felled by the Canadian Forestry Corps; and the land so cleared was taken over for replanting by the Forestry Commission, while the Canadian camp site is still used for the repair of forest ploughs and timber lorries. Subsequently other cleared woods and stretches of hill ground were added on the north side of the Dee, between the road from Banchory to Aboyne and that from Banchory to Torphins. Blackhall is essentially a young forest of recently formed plantations; the main trees grown are Scots pine, Norway and Sitka spruces, European and Japanese larches, and Douglas fir.

If you cross the Banchory bridge and turn right along a road signposted 'Blackhall", you will find a charming walk running past a group of forestry workers' cottages, and around the old policies at the castle, to reach the Dee near the Kelpie Rapids, a series of pools

beloved by salmon fishers. Here beech and oak, hemlock and cypress, have been planted to enliven the canopy of pine and sprucewoods.

The main road over Banchory Bridge bears west up the River Feugh to Strachan village, and the crossroads at the Freughside Inn. Here one road strike snorth-west along the fringe of Blackhall Forest to Potarch on the Dee, another heads west for Aboyne, and a third runs south up Glen Dye. The road that follows this glen winds up and over the Cairn o' Mount pass, which leads towards Laurencekirk and Brechin in Strathmore; this pass climbs to 1,488 feet, and carries the only road south out of the Dee valley, between Braemar and the coastal routes through Stonehaven. The extensive plantations of the Glendye estate, largely of pine, extend for 4 miles up Glen Dye, and have a total area of 3,000 acres, all established since 1854.

The *alternative* route from Banchory bears left, crosses the Bridge of Feugh, and leads to the South Deeside road and the well-known 'Slug Road' over to Stonehaven. The narrow Bridge of Feugh is well known as a vantage point from which one may observe, in spring, the salmon leaping up the falls in the river's rocky bed, on their way upstream to their spawning grounds. Above it, along the banks of the Feugh, rise the extensive woods of Invery and Tilquillie.

DURRIS FOREST

From Banchory down to Aberdeen the road on the south bank of the Dee runs close to many fair-sized woodlands, some of which are now embodied in Durris Forest; this forest comprises 24 separate pieces of old woodland or former moorland, with a combined extent of 4,700 acres. Its development has been proceeding continuously since 1931, and the older plantations are now at the thinning stage; the trees grown are of the same kinds as those at Blackhall. The character of the land changes markedly from the fertile strath beside the Dee to the inhospitable northern slopes of the Grampian foothills. The plantations run up to 900 feet above sea level near the Slug Road, where they border the main road from Banchory to Stonehaven. This forest draws its name from the Durris estate around Kirkton of Durris, a village close to the Dee.

The policy grounds of Durris House contain a notable collection of rare specimen trees including a wellingtonia or 'big tree' from California which, though only 113 feet tall, has a girth of 20 feet; a Douglas fir 147 feet tall and 15 feet in girth; and a specimen of the unusual Low's silver fir, *Abies lowiana*, which is probably the biggest in Britain, being 145 feet tall and 14 feet round. The Slug Road from Banchory to Stonehaven leads the traveller through the

western woods of Durris Forest – plantations topping windswept summits such as Cairnshee and Mulloch Hill, with grand views west up Deeside or south west to Clachnaben in the Grampians. Neighbouring the top of the pass, the Forest's main block lies around Cairn-mon-Earn (1,245 feet). A by-road, starting at the wayside cafe, runs down below this, past the woods around Denside, to Kirkton of Durris. There is another group of pleasing woods beside Kirkton of Maryculter, while at Clochandighter and Duff's Hill, new plantations of Sitka spruce and Lodgepole pine brave fierce winds off the North Sea, only a few miles away. In this eastern portion of Durris Forest, between Cove Bay and Peterculter, the woods give welcome shelter to the many exposed upland farms amidst which they stand. At Banchory-Devenick, on a hilltop commanding a grand view of Aberdeen, an attractive wood of broadleaved trees and unusual conifers has been laid out around Prince Albert's Cairn.

DOWN THE WINDING DON

Ae mile o' Don's worth twa o' Dee,
Except for salmon, stane, and tree.

The River Don, which lies wholly in Aberdeenshire, follows an exceptionally tortuous course for fifty miles, from its source above Cock Bridge on the famous Lecht road, in the remote Grampians, eastwards to reach the sea at Aberdeen. For the whole of this way it is closely neighboured by woodlands – not the great ones of its sister river the Dee, but rather the small plantations of a hundred acres or so, or the broken fragments of primeval forests of oak, birch, or pine, clinging to the steep slopes through which it has carved its channel. The hills around are likewise on a lesser scale than those of the Dee, being in the 2,000 foot class and divided into minor ranges or clusters. But for this reason their slopes carry a richer pattern of pasture and ploughland, running up to the broad bleak moors of the summits. The many scattered woods give valued shelter to what would otherwise be a barren landscape; nor can one doubt that they help enormously in the husbandry of the farms that neighbour them.

Strathdon, which at 1,000 feet is the highest settlement on the course of the river, is encircled by an expanse of woodland. One of the largest and most high-lying forestry estates is that of Candacraig where several hundred acres of felled woodland and bare hillside have been planted since 1945; much land has been ploughed prior to planting, and the estate maintains its own forest nursery. In these new woods the Scots pine is used mainly as a nurse for trees that start

growth less readily, but eventually may yield more or better timbers; these 'main crop' trees include larches, Norway spruce, and silver firs. Most of the land lies between 1,000 and 1,500 feet, and the heavy winter snowfall limits growth rates, and occasionally checks woods work. But certain trees prove quite at home under the severe climatic conditions, and Scots pine, European larch and birch often spring up naturally from self-sown seed. There are over 2,200 acres of woods at Candacraig; and planting still proceeds steadily.

Around Strathdon the Commission is establishing one of its larger forests, known as Tornashean. This extends to 9,150 acres, but only 3,550 acres are as yet earmarked for planting, the rest being hill grazings. The larger portion of Tornashean lies on the south bank of the Don, running south over the old deer forest of Bunzeach towards the slopes of Morven, a prominent landmark 2,862 feet high. Planting, which began in 1955, is mainly with hardy Lodgepole pine and Sitka spruce; the land is tine-ploughed, and the young woods are carried up to 1,500 feet elevation. North west of Strathdon a by-road winds up the Water of Nochty towards the Ladder Hills to lead round into Glen Buchat. Beside it, where the mansion of Auchernach once stood, is the Auchernach portion of the forest, a green expanse of spruce and pine sweeping up into the encircling moors, and planted since 1945.

From Strathdon the River Don wanders down through Towie to Kildrummy, with its impressive ruined castle. Hereabouts there is much extensive planting on the estates of Kildrummy and Clova. The Don sweeps boldly on, to follow the Rhynie-Alford road through the picturesque gorge between the Correen and Coiliochbhar hills, below the woods of the Littlewood and Brux Estates, to reach the fertile well-farmed Howe of Alford. On the Correen Hills themselves, 4 miles to the north of Alford town, stands Whitehaugh Forest, with 1,500 acres of plantations of Scots pine, Norway and Sitka spruce, and Japanese larch, all established since 1934. Although the slopes lie around the 1,000 foot contour and the winter snowfalls are heavy, good growth has been made and the young woods are now being thinned out. A forest road, open to walkers, runs north to the Clatt-Leslie road.

Below Alford the Don heads north-east past the plantations around Castle Forbes to the braes of Bennachie. This prominent hill, 1,733 feet high, with its bold outlying peak called the Mither Tap, stands as a landmark to the broad uplands of Buchan, for there is nothing higher to the north or east, and even from the south it forms an impressive ridge on the skyline. Bennachie's fame is recorded in a well-known song with several versions. The best perhaps is that published by John Ord in 1930:

Oh! gin I were whaur Gadie rins,
whaur Gadie rins, whaur Gadie rins,
Oh! gin I were whaur Gadie rins,
at the *fit* o' Bennachie
Oh! I should ne'er come back again, come
back again, come back again
Oh! I should ne'er come back again,
your Lowland lads to see.

This grand hill now lends its name to a forest of 6,250 acres, formed since 1938 on both its northern and southern slopes. Then across the Don to the south, on the hill called Cairn William, Pitfichie Forest (7,100 acres) reaches right over to the Aberdeen-Alford road at Tilliefourie, across it, and on far up the Corrennie Hills to include part of the old deer forest of Corrennie. The two forests together form a continuous sweep of woodland, 10 miles from north to south and averaging 2 miles wide; their combined area is 16,350 acres, and 9,200 acres of this, or some 15 square miles, are classed as tree-growing ground.

This long range of granite hills, which lies some 15 miles north east of Aberdeen, is noteworthy for the persistence on its flanks of remnants of former pinewoods, established during the past 200 years by the proprietors of several private estates; most of the early plantations were cleared during the two world wars. The big post-war work of afforestation has been carried out with Scots and Lodge-pole pines, Norway and Sitka spruces, European and Japanese larches, and a little Douglas fir, distributed according to the character of the ground.

In the beautiful gorge of the River Don many fine specimen trees flourish in the ornamental area aptly named Paradise Wood, which is owned by Sir Francis Grant of Monymusk. These 'paradises' or 'wildernesses' were often formed as large-scale woodland gardens by landowners, who introduced rare exotic ornamental trees into the more picturesque parts of their natural woodlands; the presence of foreign kinds amid undoubted natives is apt to confuse the unwary botanist; it does not always mean that the whole wood has been artificially planted.

Paradise Wood holds a fine old grove of European larches, planted in 1741; these have long attracted the notice of foresters, and such was their fame in the last century that, in 1866, Queen Victoria paid them a special visit. A few outstanding specimen trees have been measured at intervals since 1841. The biggest, known as Tree 'C', was then 100 feet tall and 100 years old; its volume was estimated at 203 hoppus feet. In 1953, when it had

reached the age of 212 years, it was only 18 inches taller, at 101 feet, 6 inches; but its girth had increased so much that it then held 521 cubic feet in its stem; besides this, there were 114 cubic feet of branchwood, giving a total volume, enormous for a larch, of 635 cubic feet. The girth of this giant at breast height is 14 feet 3 inches. In this wood, too, is one of the few sawmills in Scotland that is still driven by a water-wheel.

To see the beautiful gorge between Bennachie and Pitfichie Forests, and view Paradise Wood from across the Don, go first to Monymusk, just off the B993 road from Kemnay to Alford. Proceed north, turn right to cross the Don, and then continually bear left. The road continues through the pass called 'My Lord's Throat' to Keig.

The lower reaches of the Don pass through still more well-wooded private estates, as the river swings down past Inverurie, Kintore, and Dyce to gain the sea by Old Aberdeen; and there are two Commission forests on the granitic uplands hereabouts. Kemnay Forest, which has a total area of 1,400 acres, consists of nearly a score of small blocks dispersed within the triangle of land between Inverurie, Kemnay, and Kintore. It is essentially concerned with pieces of infertile or intractable land scattered amid an otherwise well-farmed territory; some were former woodland, bared of trees when acquired, while others were heathery moorland. At various dates since 1925, each in turn has been planted up, so that they now present a pattern of varied ages and kinds of tree. The main sorts grown are Scots pine and the spruces.

Kirkhill Forest is right in the public eye because it stands astride the main Inverurie road only 7 miles from the centre of Aberdeen, on the slopes of the prominent Tyrebagger Hill, 821 feet high. It covers 3,000 acres of ground, and its oldest plantations date from 1922. The woods consist largely of Scots pine, Norway and Sitka spruces, and European and Japanese larches; they have grown satisfactorily and thinnings have been going on for many years. Those portions that adjoin the road had long carried woodland, before clearance in the 1914–18 war, but later extensions are largely on poor moorlands.

BUCHAN

The land of Buchan, that north-eastern promontory that is sometimes called 'the cold shoulder of Scotland', is a sparsely wooded region. Its well-tilled farms give place here and there to moors and peat hags, but there are few relics of old forests except for logs buried in the peat, and the more recent tree plantings are only occasional and local. Most are associated with the few big houses of the region, and most again lie well inland; their history seldom

goes farther back than the deliberate planting schemes of landowners in the eighteenth and nineteenth centuries, which often included shelter-belts as well as policy woods. But on the whole this north-easterly region is sadly deficient in the shelter that it needs to temper the gales from off the North Sea. Nevertheless, despite the lack of locally grown timber, at Fraserburgh sturdy fishing vessels are built with stout frames of Scots oak, and planking of Scots-grown larch.

The most northerly of the woods are those around the mansions of Philorth House and Cairness House, inland from Fraserburgh; others lie around Strichen, Maud, and Old Deer. The Commission has one property in this region; known as the Forest of Deer, it covers 3,500 acres comprised in a number of blocks scattered between New Pitsligo in the north west, Fraserburgh to the north, Old Deer in the centre, and Peterhead in the south east. Planting began here about the year 1926, and the older woods, which are largely of Norway and Sitka spruce, are at the thinning stage; other trees grown are Japanese larch and Lodgepole pine, but Scots pine has proved unsuited to this maritime climate. Close to New Pitsligo, Sitka spruce and Lodgepole pine have been planted on land recently stripped of peat – still valued locally as a fuel. The name of 'Deer' has nothing to do with animals, but derives from the ancient Abbey at Old Deer, named in turn after the Gaelic *darach*, an oakwood. Many oak logs can still be found in the peat bogs.

A recent extension to the Forest of Deer lies on Mormond Hill, which at 769 feet is the highest point in Buchan. On its southern slopes this hill bears a white horse and a white stag, formed by exposing the quartzite rocks; Mormond Hill is also well known as a landmark for mariners.

The town of Turriff, where the Idoch Water joins the Deveron, is neighboured by the woods of Forglen House over in Banffshire; and by those of Delgaty Castle, Craigston Castle, Gask House, and Hatton Castle in Aberdeenshire. Around it grows the rather scattered Commission forest called Delgaty, which consists of some 15 small blocks in the two counties. It is a young forest, established since 1950 by the planting of spruce, larch, and pine on cleared woodlands and exposed moors, and now extends to 2,300 acres.

To the south, along the high road and railway towards Aberdeen, stand the village and ancient castle of Fyvie; and nearby, the Fyvie Estate has extensive woodlands reaching towards Rothienorman.

> Green grow the birks on sweet Ythanside
> And low lies the bonnie Lewes o' Fyvie
> In Fyvie there's bonnie, in Fyvie there's braw,
> In Fyvie there's bonnie lasses mony.

From Fyvie we may follow the course of the River Ythan south-eastwards towards the sea; for many miles its banks are lined by woodlands new and old, enjoying the shelter of its valley. A large group of plantations and policy woods encircle Haddo House, south of Methlick. There are others around Esslemont, west of the town of Ellon. But the east coast of Buchan, fringed in places by sand dunes, carries next to no woodland.

Huntly Castle

STRATHBOGIE

There's cauld kail in Aberdeen
And custocks in Strathbogie
And ilka lad maun hae his lass
But I maun hae ma cogie.

The old stone town of Huntly, with its impressive ruined castle of the 'Gay Gordons', stands where six roads meet at the heart of a basin in the hills where the River Bogie joins the larger River Deveron. This hollow, known as Strathbogie, holds much fertile and well-farmed land, but this gives way, quite suddenly, to barren heather moors or poor peaty grassland on the braes all around. Such land has become the scene of the Forestry Commission's biggest operations in the north-east.

North of Huntly the prominent hill called 'The Bin,' from the

Gaelic *beinn* or mountain, rises above the main road towards Keith, reaching a height of 1,073 feet. The original Bin Wood was cleared in the 1914–18 war, and in 1925 the Commission acquired about 3,500 acres for replanting. The principal trees chosen for this work were the Norway and Sitka spruces, the Scots pine, and the European larch; these have grown well, and thinnings in the thriving plantations have been in progress for many years. Later, the Bin Forest was extended by the addition of several hundred acres of bare hill ground close to Keith; this lies on the ridge called The Balloch, on the Banff-Aberdeen border, between the road from Keith to Huntly, and that from Keith to Banff. The subsequent addition of about a dozen small woods and stretches of moorland in and around the straths of the Deveron and the Isla has brought the total extent of The Bin Forest to 8,100 acres, and all but 900 acres of this is tree-growing land. About 50 people are engaged on tending and thinning work, and several smallholdings for forest workers have been developed on the more fertile land within the forest's bounds.

Clashindarroch Forest, though the largest in North East Scotland, is one of the least seen. Its major portion lies between Huntly and the Tap o' Noth, within the square of roads linking Huntly, Rhynie, Cabrach, and Glass. It is only along the Cabrach Pass that the woods reach down to the roadside; elsewhere they are screened by a fringe of hill farms. From the Cabrach road a high ridge runs north towards the Deveron, and its eastern face is broken by an intricate system of valleys winding down towards Strath Bogie. The lower reaches of these valleys, down towards Gartly Station, have been kept under agriculture; their upper ridges, around 1,500 feet, are too exposed even for tree planting, but the intervening braes have both shelter and a deep subsoil, and have proved – after some setbacks – to be good forest land.

In the early years a good deal of European larch was planted at Clashindarroch, and made a good start. But eventually many stands were afflicted by a strange 'die-back' disease, which is now believed to have been due to a combination of harsh climate and the use of an unsuitable Continental strain, which made the young stands susceptible to larch canker and other ills. Larch trees that could thrive in the high Alps cannot stand the fickle springs of these uplands, where sharp frosts may strike them very late in the year, after their tender growth has begun. But some stands have grown through the difficult stage, and it is now known that strains from Scottish sources are more reliable.

In place of the larch, and on poor land with some heather, spruces are now grown, with pine trees to nurse them up in their early years. The rich subsoil is overlaid by a 'hard pan', and it has

been found essential to rip this up before plantations will thrive. The tool used is called a 'tine plough', and it is drawn by a powerful crawler tractor; it was originally designed to break up tarmac on disused airfields, and has a steel blade of armour-plate quality. Each tree receives two ounces of ground mineral phosphate to give it a start, and the young sprucewoods give promise of high yields of timber in the near future.

A system of access roads has been built – one up each valley, with a connecting link running from north to south along the main ridge. These roads are open to walkers, though not to cars, and they lead the visitor through wonderful views of forest-clad slopes.

Clashindarroch Forest holds two substantial experimental areas run by the Forestry Commission's Research Branch, one being at Mytice and the other in the Drumfergue valley. There is a large, detached portion of the forest called Gartly Moor, on the ridge between Gartly Station and the Glens o' Foudland. The total extent of the forest is 18,650 acres, of which 6,200 are reserved for farming, leaving 12,450 acres that are either under plantations or due for early afforestation. About 30 people are employed on planting and tending, and many more will soon find work here as the harvest of the thinnings increases. Near the forest's southern boundary, the Tap o' Noth, a landmark for many miles in all directions, rises to 1,851 feet. On its summit is a famous prehistoric vitrified fort, and a modern look-out post from which the forest staff survey the woods to detect any outbreak of fire. Most of the Clashindarroch woods stand remarkably high, between 1,000 and 1,500 feet above sea level, and they well show the potentialities of such uplands for timber production; some of the oldest spruce are already approaching 100 feet in height, after only 30 years' growth.

Since the modern forest stands on the Braes o' Bogie it is fitting here to recall the traditional ballad collected here by John Ord:

> By Bogie's streams that rin sae deep,
> Fu' aft wi' glee I've herded sheep:
> I've herded sheep, or gathered slaes
> Wi' my dear lad on Bogie's braes.
>
> But wae's my heart thae days are gane,
> And fu' o' grief I herd my lane;
> While my dear lad maun face his faes,
> Far, far frae me and Bogie's braes.

BANFFSHIRE AND THE LOWER SPEY

To review the forests of Banffshire, let us start at Tomintoul, well

known as a tourist centre and as one of the highest and most isolated villages in Scotland. Set at 1,100 feet above sea level, on the northern fringes of the great Cairngorm Hills, it can be reached by four roads – one from Grantown-on-Spey over the steep-sided gorge of the Bridge of Brown, another from Balmoral on Deeside by the famous Lecht Road, which climbs to 2,000 feet, and is often blocked by snow in winter, a third up the River Avon (pronounced *A'an*) from Ballindalloch on Speyside, and a fourth up Glen Rinnes from Dufftown. Along all four roads, and across the hills between them, the traveller today will see in progress the building up of a remarkable new forest, called Glen Livet after the central stream – which also lends its name to many world-famed brands of whisky.

These lands once formed part of the vast estates of the Dukes of Richmond and Gordon, but are now held from the Commissioners of Crown Lands. They include numerous small farms and crofts which stood in sore need of shelter, and this is now being provided by a patchwork pattern of plantations and shelter-belts. These cover 8,000 acres, in no less than 30 separate blocks. All the better lands have been kept under farming use, and many of the uplands are still grazed by sheep, and thus Glen Livet provides an excellent example of the planned integration of forestry and agriculture. Scots pine, Lodgepole pine, and a little Japanese larch, together with Norway and Sitka spruces, are the main trees here. Despite the severe winters, which sometimes halt all planting for a month on end, the growth of timber is steady, if somewhat slow.

From Tomintoul we may descend the glen of the River Avon, passing on our way the picturesque fringes of birch scrub and juniper that form valuable shelter and grazing grounds for sheep stocks in hard weather. At Ballindalloch we join the Spey, and close by lies ancient Ballindalloch Castle, the seat of the Macpherson Grants and the home of a famous herd of Aberdeen-Angus cattle, as well as the centre of valuable woodlands noted for fine Scots pine and European larch. The new distillery at Tormore is a reminder of Speyside's main industrial activity, in which the local water, the peat used for the fires that dry the malt, and the peculiar qualities of the barleys grown in the north-east each plays its subtle part.

The main road from Keith up the Spey to Grantown follows the south bank of the river, but there is an even finer scenic road on the north bank. Opposite Ballindalloch this road passes below Scootmore Forest in Morayshire, which holds 800 acres of young plantations spread over two rounded hills, just above the Spey's swift stream. Our way hence lies downstream towards Craigellachie, and at Archiestown we pass close to the new Elchies Forest, where 3,000 acres of poor hill land, set in a basin of the bleak hills, are steadily

being ploughed and afforested with Lodgepole pine and Sitka spruce. Away to the south Ben Rinnes, 2,755 feet, stands sentinel over the glens; this last outlier of the high Grampians has no equal anywhere to the north or east.

Yet there is still mountain scenery around Ben Aigan, 1,544 feet, and on its flanks, within the triangle formed by the roads linking the towns of Craigellachie, Rothes, Keith, and Dufftown, the woods of the young Rosarie Forest alternate attractively with stock-raising farms. These plantations extend to over 5,000 acres, and are largely of Scots and Lodgepole pines, with some spruce and larch. Several private owners are actively developing their woodlands hereabouts, and those of Drummuir Castle Estate feature in the views from both road and railway through Strath Isla, between Dufftown and Keith. In the shelter of the straths, broadleaved trees such as beech, oak and sycamore, lend their softer greens to the forest hues.

Between Rothes and Fochabers, on the west side of the Spey, stands Teindland Forest, of 3,000 acres, which has become famous as the scene of extensive long-term research in the raising of timber crops. Findlay's Seat, its main feature, is an exposed hill 800 feet high, clad in heather moor which had produced a singularly infertile podsolised soil; Scots pine planted in this never developed beyond worthless scrub. In 1924 the Forestry Commission's Research Branch was given an experimental reserve of a few hundred acres on which to take up the challenge of infertile heaths. There followed a classical series of experiments (fully described in the Commission's Bulletin No. 32, *Experiments in the Afforestation of Upland Heaths*), which helped pave the way to the successful planting of scores of thousands of acres of similar ground throughout Scotland and Northern England. Different methods of ploughing, various fertilisers, and different species and local strains – or provenances – of trees were all given systematic trials in the long search for clues as to the disappointing growth of those first forlorn pines. A sample of those trees has been preserved as a contrast to the new flourishing woods, for the Teindland experiments have become a place of pilgrimage for forest scientists.

Facing Teindland across the Spey stands the vast forest of Speymouth, which lies partly in Morayshire and partly in Banffshire. Most of its 10,500 acres of woods were formerly part of the estates of the Dukes of Richmond and Gordon, who, early in the nineteenth century, set up the great Gordon Castle on the site of the old township of Fochabers, and built the present model town to house the displaced people. Certain of the dukes were great tree planters, and established fine stands of Scots pine on the hills to the east of the Spey; but most of this grand timber was felled in the First World

War. Since 1946 the Forestry Commission, who feu the woodlands from the Commissioners of Crown Lands, have been steadily rebuilding the plantations. Some young stands of Scots pine – many of seedling origin, have been thinned out, and the poorer ground has been deep-ploughed prior to re-afforestation with Scots and Lodgepole pines, and the hardy Japanese larch. A fire tower has been built on Whiteash Hill, beside a stone pillar that commemorates a former Duchess of Richmond. In Fochabers are the local Commission offices, and also a seed kiln, in which seed for the forest nurseries is extracted from cones collected throughout eastern Scotland.

Fochabers is also the home of the old-established forest nursery firm of George Christie, which has a hundred acres of land devoted to tree raising, close to the town. At Mosstodloch, a mile to the west, stands one of Messrs. Riddoch's sawmills, one of the largest in the country using home-grown timber – mainly pine, larch, and oak. There are outlying woods of Speymouth Forest beyond the Spey, which here meanders through broad banks of shingle, its course often changing suddenly during spates, toward the sea.

During the eighteenth century rafts of Scots pine logs were regularly floated down the Spey from the vast forests of Rothiemurchus and Glen More in Badenoch, and there was a thriving shipbuilding industry at Garmouth – now a quiet village a mile from the river's present mouth. The Spey now enters the sea at Kingston; but Kingston itself is threatened by a recent shift in the course of the river. In the past, Garmouth was a port of some consequence, and it was here, in 1650, that Charles II, whilst an exiled prince, signed his adherence to Scotland's Solemn League and Covenant. Later, this lower reach of the Spey featured in the final downfall of the unhappy Stewart dynasty, for in 1746 the Duke of Cumberland crossed by Cumberland's Ford, just below Fochabers, on his way to defeat Prince Charles Edward at Culloden Moor.

The most fascinating feature of the Speymouth Forest countryside is the fantastic erosion of the hard, compacted glacial drift, formed by the glaciers over the deeply buried rocks of Old Red Sandstone, but having pebbles of many kinds embedded in it. Once the protective skin of pine and heather is removed, the action of rain, frost, sun, and running water causes great gulleys, locally known as *dramlachs*, to form, and these rapidly extend farther and farther into the hills. Examples can readily be seen two miles out of Fochabers, beside the main road to Keith. Here and there, between two gulleys, 'earth pillars' are left isolated, with almost vertical sides, and at present some good examples can be seen along the adventurous and

insecure public road – for this itself is subject to erosion – which runs south from Fochabers along the east bank of the Spey. There is a fine view west, just north of the dramlach of Aultderg on the Banff-Moray boundary, but earth pillars are short-lived and these particular ones may soon collapse.

Turning east, we find within the triangle formed by the three towns of Keith, Cullen and Buckie the high, bleak, and peat-clad uplands of Aultmore. There are crofts and farms on both its northern and southern flanks, but the bare summits have never been found worth farming. Recently the Forestry Commission acquired a broad expanse of 3,000 acres, stretching for four miles from east to west; ploughing for planting has now begun, and soon the ridge will carry crops of Sitka spruce, Lodgepole pine, and Japanese larch, forming the young Aultmore Forest.

Cullen House

The northern portion of Banffshire is a land of large farms and broad hill pastures, with a fringe of fishing towns and villages in the bays that break the cliffs of its rugged seashore. There is a fair proportion of woodland, the bulk of it forming part of a few large private estates. A notable one is that of Cullen, around Cullen village on the coast, which is one of the Seafield properties, and has extensive woods of Scots pine, European larch and Norway and Sitka spruces. Cullen House (occasionally open to the public) has magnificent policy grounds and fine specimen trees in its pinetum; there is also a forest nursery, a sawmill, and a creosoting plant for the preservative treatment of timber. Buckie, a considerable fishing port,

has two shipbuilding yards where drifters and other small craft are built with frames of Scots-grown oak and planking of Scottish larch.

Several other woods, largely of pine, lie along the lower course of the River Deveron, which here forms, in a general way, the boundary between Banffshire and Aberdeenshire. There is one big group around Rothiemay Castle. The Forglen Estate, north east of Turriff, likewise has considerable woodlands, while there are other clusters nearer the coast around Mountcoffer House and on the Fife estates just to the south of Banff.

Thriving sprucewoods in Glen Livet Forest

The old Caledonian pines of Glen Derry, on the Mar Estate

The Coyles o' Muick, well-known landmarks in Alltcailleach Forest, near Ballater

The Linn o' Muick, Alltcailleach Forest

Dunnottar Castle

Craigo Woods, wi the splash o the cauld rain
beatin
I' the back end o the year,
When the clouds hang laigh wi the weicht o
their load o greetin
And the autumn wind's asteer;
Ye may stand like ghaists, ye may fa i the blast
that's cleft ye
To rot i the chilly dew,
But when will I mind on aucht since the day I
left ye
Like I mind on you—on you?

Violet Jacob

AROUND THE FORESTS OF ANGUS AND THE MEARNS

BY H. L. EDLIN

THE COUNTY of Angus, together with that part of Kincardineshire that lies south of the Dee Valley, forms a compact region holding three well-marked zones, each running parallel from south west to north east and so following the trend of the coastline.

On the north we have the southern face of the mighty Grampian range, with hard rocks and steep slopes rising to the 3,000-foot peaks of Driesh, Mayar, Broad Cairn, and Glas Maol; a truly Highland country this, fretted by steep-sided glens that lead only into hill

recesses, with by-roads that dwindle to tracks and rarely cross the ridges. This Grampian region is sparsely wooded, having been thoroughly grazed and burned over for centuries. No relics of its old Caledonian pinewoods survive. There are occasional shelter-belts around lodges in the glens, and some considerable plantations along its southern fringe; while in recent years the Forestry Commission has begun a number of extensive works of afforestation. Otherwise this is a land of sheep, grouse, deer, and heather. There is today no town, not even a village with a parish kirk, nor indeed anything larger than a clachan in this whole zone, but we should not overlook its past importance as a place for the summer pasturage and shielings of the settlements to the south east; it was probably such long-continued grazings that denuded these hills of their original tree cover. Ruins of old shielings can still be seen in many of the new forests.

Through the centre runs Strathmore, that finest and most fertile tract in the whole of Eastern Scotland. Sheltered on the north by the Grampians and on the south by the Sidlaws, it has a rewarding soil derived from the Old Red Sandstone rocks; for the great Highland Boundary Fault runs straight as the stroke of a knife along the foothills from Kirriemuir to Stonehaven, giving the land to the south east of it a Lowland character. Strathmore is thus a region of rich lush pastures and high-yielding arable fields, farmed with exceeding skill. To traverse it in autumn when mile after mile is golden with the ripening oats and barley, is to realise the full bounty of the fruitful earth. In other fields the fat beef cattle, of the black Aberdeen-Angus or the red Beef Shorthorn breeds, stand knee-deep in the clover, while much land is devoted to the raising of seed potatoes for shipment to Southern Scotland and England – a profitable if unpicturesque crop. Strathmore carries, however, a fair density of woodland, largely in the form of small plantations of Scots pine, European larch, or Norway spruce; most have been established on odd patches of peaty or gravelly soil which thrifty landowners decided would yield more under trees than under farm crops. The Forestry Commission has also established or replanted woodlands on ground of a like character. Near the mansion houses, however, there are many fine belts and policy woods of beech, oak, and sycamore. The four inland towns of the region – Laurencekirk, Brechin, Forfar, and Kirriemuir, and also Alyth and Coupar Angus just in Perthshire, naturally lie in this fertile strath; there are many villages, some being situated at the foot of the Grampian range.

The third zone is that of the Sidlaw Hills in Angus, and their continuation north-east along the coastal ridge of Kincardineshire. Though they include much sandstone, they have as it were, a back-

bone of quite different igneous rocks – basalts intruded as molten lavas from the bowels of the earth. And although they rarely reach 1,500 feet high they endure considerable exposure – towards the cold North Sea on the one side and the mountainous Grampians on the other. Both bedrock and climate thus give to the Sidlaws the character of a true mountain range, with its own local variations in conditions for tree growth. Its northerly slopes may be cold and inhospitable, but its southern flanks, facing towards the Firth of Tay, enjoy surprisingly warm and congenial weather, and there the broadleaved trees can flourish. The towns of this region all lie along the coastline; in the north the fishing harbours such as Stonehaven and Gordoun occupy inlets between the sheer, wave-fretted cliffs, while to the south seaports such as Montrose and the great city of Dundee stand beside harbours on a smoother coastline with many stretches of dunes and sandy beaches.

FETTERESSO AND DRUMTOCHTY FORESTS, KINCARDINE

The Forestry Commission, which takes the lead in the afforestation of the Grampian slopes above Strathmore, holds five forests comprised in two groups – one in Kincardineshire inland from Stonehaven, the other in Angus north of Kirriemuir. The Stonehaven group comprises the two adjacent forests of Fetteresso and Drumtochty, and extends from the outskirts of Stonehaven town for 12 miles west and south-west to the Cairn o' Mount road; the group has a total area of 17,600 acres of which 13,000 is regarded as tree-growing land while 4,600 consists of hilltops too exposed for profitable timber crops.

Fetteresso draws its name from the old estate of Fetteresso Castle, and it includes four blocks of old-established woodland near that ruined mansion, in the glens of the Carron Water and its tributaries between the main road and the railway from Stonehaven to Laurencekirk. These woods formerly carried good stands of beech, but those were felled in the 1939–45 war, and the land has since been replanted, partly with beech, partly with larch and other conifers. One block, which borders the main road from Forfar where it drops down the hill into Stonehaven, holds a wide variety of broadleaved trees – ash, oak, beech, sycamore, poplar, and wild cherry as well as pine, larch, spruce and noble fir; it has been planted with a view to scenic effects.

The main portion of Fetteresso lies farther inland; from a point three miles west of Stonehaven it extends westwards for six miles, taking in the remote and lonely valley of the Cowie Water and its tributaries, the slopes on either side, and the Braes of Glenbervie on the south. When acquired in 1943 nearly all this ground was heather

moorland, but it has now been planted up with Scots pine, Sitka spruce, Japanese larch, and other conifers. A system of forest roads has been built to give access, and these are open to walkers. The motorist will gain an excellent impression of the Fetteresso woods by taking the road from Stonehaven past Stonehaven Station and then bearing right repeatedly to follow the Swanley Road, which runs through delightful scenery up the Cowie Water, to join the Slug Road running over to Banchory.

Although these hillsides were roadless and utterly deserted when afforestation began, remains of crofts in the glens show that the land was formerly settled, and its treeless condition is the outcome of grazing and burning in days gone by. There is something pathetic about a cottage and byre that has tumbled down to a mere rickle o' stanes. Curiously, often the only living thing to survive is the rowan tree planted by the vanished crofters in accordance with the old Highland tradition that credited it with magical powers to ward off witchcraft. But new life is returning as the tending of the trees calls once again for the care of human hands, though it is doubtful if people will ever again choose to dwell so far out or so high up the burns.

Drumtochty Forest, which adjoins Fetteresso on the south-west, holds two stages of afforestation work. Beside the Braes o' Glenbervie, in the remote glens of the Bervie Water and its side burns, lies the Glenfarquhar section, comprising some 6,000 acres of hill land acquired in 1953, and still in the early stages of afforestation, with trees but a few feet high. Farther south the Glen o' Drumtochty, on the headwaters of the Luther Water, holds much older woods comprising some 2,500 acres of plantations and 1,000 of hilltops, which was acquired in 1926 and thus forms one of the older Commission units in the North East. It is familiar to visitors because a much-frequented motor route runs up the Glen o' Drumtochty from Auchenblae to Clattering Brig, on the route over the Cairn o' Mount pass from Strathmore to Glen Dye and Deeside. The nucleus of the forest is the old woodland around Drumtochty Castle, now a school; but the plantations have been extended over former heather moors on Goyle Hill (1,527 feet) to the north, and Strathfinella Hill (1,357 feet) on the south.

On the good soils near the road in the sheltered main glen a number of the less usual conifers have been planted, with satisfactory results; they include the Grand and the Noble silver firs, *Abies grandis* and *A. nobilis*; the Western red cedar, *Thuja plicata*; the Western hemlock, *Tsuga heterophylla*; and the Serbian spruce, *Picea omorika*. Broadleaved trees grown on small patches of more fertile ground in the main glen include beech, oak, sycamore, ash,

birch, and rowan. Where woodland conditions have become established, several of these come up freely from self-sown seeds, as does the native Scots pine also.

Just beside the main road, on the south side, there is a remarkable Sitka spruce specimen tree which is believed to be one of the largest in Britain; in 1961 when its age was estimated at 110 years, it was 118 feet tall, 20 feet round at breast height, and had a volume of 892 hoppus feet. Other conifers raised on the lower braes are Norway spruce and European and Japanese larches, together with a little Douglas fir and Scots pine.

The exposed upper braes are suited only to hardy and unexacting conifers, the chief of which are the Sitka spruce and the Lodgepole pine. The bushy mountain pine, *Pinus mugo*, from the Alps, has been used as a nurse or shelter tree for Sitka spruce on these exposed slopes. The woods run up to an altitude of 1,100 feet, but there are experimental plots at still higher levels.

Thinnings have been in progress in the older plantations for many years, and there is now a steady output of poles for fencing or pit-props, and small sawmill timber. A system of roads has been built to make possible the hauling out of this material. Some thirty people, many of whom come from Auchenblae village, find regular work at Drumtochty. The Glenfarquhar area on the north includes a seed orchard, where forest tree seed of approved origins is being produced.

The country around Drumtochty Forest has interesting historical traditions. At Auchenblae stand the ruins of the medieval chapel named after St. Palladius, a pre-Columban Christian missionary, who was sent to Scotland about 430 A.D. by Pope Celestine I, in order to convert the heathen Picts. Two miles south of the Clattering Brig are the ruins of Kincardine Castle, once the hub of the thriving town that gave its name to the modern county. Its recorded history runs from 1107 to 1792, and it was visited by nearly every sovereign from William the Lion to Mary, as well as by the English king Edward I. on one of his campaigns. Today Kincardine is no more than a ruined wall and a cluster of green grassy mounds, showing how completely land use can change with the centuries. The Scottish kings had their Hunting Park to the west of Drumtochty, while the vast Forest of Glenfarquhar on the north was also a hunting ground; red deer are seen occasionally there today, while roe deer haunt the Drumtochty woods.

Strathfinella takes its name from the queen Finella – *fionn ghuala*, the white-shouldered one. According to tradition, in 994 she enticed to this glen King Kenneth III., and slew him in revenge for the death of her son, the king's nephew. Then, so it is said, she fled, and the king's henchmen set bloodhounds on her trail. But Finella

escaped to the coast by swinging from tree to tree through the great forests. Without believing this entirely, we can find evidence here for far more woodland in this region than meets the eye today. During the Middle Ages the Carmelite monks had a monastery in Drumtochty Glen, and no doubt their sheep flocks contributed to the gradual disappearance of the forest cover. The name of Auchenblae, incidentally, means 'the field of flowers', and it would be hard to find a prettier title for so charming a village.

THE ANGUS GLENS

As we cross over into Angus we pass the foot of the long glen of the River North Esk – one of the two Esks that run out to the sea through the broad Montrose Basin. Glen Esk, as this northern valley is called, contains few woods and no noteworthy ones; and the same is true of the valley of its tributary stream the West Water, although in its upper reaches that stream is known as the Water of Saughs – or willows.

To reach the remote forests of the Angus glens let us start at Brechin, a manufacturing town with an ancient cathedral and a famous round tower that once served as a refuge for early Christian priests. The first roof timbers of this cathedral were drawn from the Forest of Kilgarie on the slopes of the Caterthuns, and in 1305 A.D. the English King, Edward I., gifted twelve oaks from his Forest of Forfar for roof repairs. Proceeding west on the Forfar road, we pass the well-tended woods of the Careston estate; away back in 1828, the Careston forester, Henry Steuart, wrote a textbook of forestry entitled *The Planter's Guide*, well known in its day. The Finavon estate, beyond, lies in the shadow of an ancient hill fort whose walls were 'vitrified' by burning local timber in their ramparts; this may have happened accidentally or in war, or may have been done deliberately to fuse the stone into a stout barrier. Much of the produce from the modern Finavon woods is converted at the home sawmills, whose products include fencing and garden furniture. From Tannadyce we head north-west to pass the policy woods of Cortachy Castle, the seat of the Earl of Airlie; the Airlie Memorial Tower on the brae above serves as a landmark to the hills around and the broad strath below, and at its foot stand many acres of thriving plantation.

From Dykehead, where there is an hotel, a road heads north up Glen Clova, the valley of the South Esk stream. At once the country changes in character from a well-farmed plain to true hill country with sheep grazing, grouse moors, and scattered pine woods. Ten miles up the narrow glen, at Milton of Clova which has the last hotel, there is a further abrupt change, to a true mountain valley,

hemmed in by 2,500 foot peaks with precipitous slopes, crags, and corries. The road ends just before Glen Doll Lodge, now a Youth Hostel, and here, hidden away in a deep hollow of the high peaks, stands Glen Doll Forest. It stands in an impressive amphitheatre verged by 3 miles of sheer crags, broken by steep slopes up which three walkers' tracks climb precariously – the Capel Mounth north to Ballater, Jock's Road north west over the Tolmount to Balmoral, and the Kilbo Track south to Glen Prosen and Glen Isla. The forest holds 3,700 acres of ground, but much is high-lying sheep grazing, rock, and scree, and only 1,300 acres rank as tree-growing land. The forester has to wage a constant struggle with hill torrents that can wash away trees, and avalanches of snow that break his fences and let in the hungry red deer of the peaks, but he is raising flourishing young crops of Norway spruce, Japanese and European larches, and Scots and Lodgepole pines. The next glen to the west is that of a tributary of the South Esk, the River Prosen. It can be approached from Dykehead or from Kirriemuir, by roads which wind through mile after mile of wild birchwoods which serve as shelter for hill sheep in hard winters.

Beyond the Balnaboth Estate, 8 miles from Dykehead, the public road ends. Beyond lies the new Glen Prosen Forest, which occupies nearly the whole head of the glen, 8,300 acres in all. Plantations of pines, spruces, and a little European larch are being steadily established over 2,300 acres of this, but are still too young to catch the eye. The rest of the land forms sheep grazings, and runs up to two fine peaks, Mayar (3,043 feet) and Driesh (3,105 feet) which commands a superb view of the whole of Angus, with range upon range of peaks sweeping like waves of the sea across the Highlands to the west, and the snow-tipped Cairngorms away on the north west horizon.

The pleasant hillfoot town of Alyth, which lies just within Perthshire, forms a starting point for a visit to Glenisla Forest, in the east of Angus. The road runs north past the old vitrified fort on Barry Hill, and crosses the Isla at Bridge of Craigisla, to reach a crossroads called Dykends. A secondary public road continues north up the pleasant pastoral glen of the Black Water to Glenhead Farm and Glenhead Lodge, deep in the bosom of the hills; beyond the last steading a hill track winds over to Glen Prosen. The lower slopes of this remote glen carry thriving young plantations of Japanese larch, Scots pine, and spruces.

A left-hand turn at Dykends takes you along the main road towards Kirkton of Glenisla. As the road descends to the Isla River, the curious round mansion of Knockshannock, now a Youth Hostel, will be seen amid the trees on the left. Just beyond this a forest road,

open to walkers though not to cars, strikes up the long glen of the Newton Burn, towards Glen Markie Lodge, three miles distant. Young plantations fringe the road all the way, and extend beyond the lodge for another four miles up far Glen Finlet. Other new woods lie in the neighbouring valleys, Glen Markie to the west and Glen Taitney on the east.

There are outlying portions of Glenisla Forest at Dalnaglar, near the Devil's Elbow road up Glen Shee; at Drumore on the road from Glenisla to Blacklunans, and at Baldovie over towards Kirriemuir. Afforestation has been in progress at Glenisla since 1950, the main trees used being Scots pine, Norway and Sitka spruces, and Japanese larch. The property extends to 11,100 acres, but 5,700 acres are reserved for farming, or are considered too high-lying for tree crops, and the present proposal for planting is therefore 5,400 acres; some 300 acres are planted each year. Many miles of new roads have been driven up the glens.

Glenisla Forest adjoins Glenprosen Forest on the north, and Glenprosen in turn comes very close to Glendoll Forest, but so high are the ranges between these glens that each forest forms a distinct operation, with its own line of approach from Strathmore, though on the map they present the appearance of a coherent group. Many of the deserted shielings and crofts in these glens appear on John Ainslie's map of Angus, dated 1794, but other ruins can be found farther up the glens than he surveyed.

IN THE BROAD STRATH

The northern portion of Strathmore, around Laurencekirk, is called the Howe o' the Mearns, for it forms a great hollow shielded by the surrounding hills, in the basin of the Luther Water, which runs south to join the North Esk. Inglismaldie Forest, which lies around Luthermuir and Laurencekirk, has been built up since 1929 by the acquisition of a dozen separate blocks of cleared woodland due for replanting, and it now covers 1,700 acres; it is named after the old castle of Inglismaldie, built of local rich red sandstone, which stands nearby. Its young plantations include Scots and Lodgepole pines, Norway and Sitka spruces, larches, silver firs and oak. Nearly all the ground is low-lying, but of a less fertile character than the rich fields that extend all round, being peaty, stony, or hard to drain; such patches of intractable ground are found in many otherwise excellent arable zones, and here they represent the deposits left by Ice-Age glaciers. There is an outlying block of Inglismaldie Forest on Woodstone Hill, 500 feet up and facing towards the North Sea close to St. Cyrus on the coast.

Close to the pleasant village of Edzell the Commission holds two

small woods in the rocky and remarkably beautiful Gannochy Glen, through which the River North Esk plunges in swift cataracts as it leaves the hills. The estates of Dalhousie, Fasque and Fettercairn nearby have large plantations of conifers along the lower slopes of the Grampians, with fine avenues and belts of beech and sycamore in the plain below, as well as shelter-belts shielding their fertile farmlands. For the rest the Howe is a region of fairly small plantations, largely of pine, each contributing shelter and small timber or poles to the numerous large farms and estates; birch and oak are found in the glens of the burns amid the coastal hills over towards Inverbervie, but they are scarcely more than scrub.

Crossing over into Angus, there is a belt of rich farmland behind Montrose, an old seaport with harbours for coastal traders and fishing craft, a shipyard, a long sandy beach, and a unique landlocked basin on the estuary of the South Esk. Hereabouts broadleaved trees – beech and oak, ash and sycamore – come into their own as shelter-belts and policy woods near the mansion houses, such as Kinnaird Castle with its great park. But a few miles to the south the character of the country changes, and the Montreathmont Moor formerly presented an expanse of poor, flat, heather moorland, though old maps show that it once carried pinewoods. Since 1922 some 2,800 acres have been afforested or replanted, mainly with Scots pine – the tree best suited to heathery ground in regions of low rainfall. The cause of the locally poor soil, and of difficulties in drainage, is the presence of surface drift of clay, sand, and gravel left by the ice-age glaciers. The pinewoods are divided into sections by broad straight rides which aid the extraction of produce from thinnings, and also lessen the chances of a forest fire spreading; a fire look-out tower dominates the whole. The local pronunciation of the forest's name is 'Montrimont'. A fair impression of its size and character can be gained from the main Forfar-Montrose road.

The estate of Glamis, around the historic Glamis Castle that is the seat of the Earl of Strathmore, lies six miles south-west of Forfar on the main road to Perth. It includes 1,600 acres of woodland, some being around the great park on the floor of the strath, and some away to the south on the lower slopes of the Sidlaw Hills. Most of the trees planted are raised in the estate's forest nursery next to Glamis church, while much of the timber harvested goes to the estate sawmill for eventual use in building or repair work; thinnings are made into pit props for the mines of Fife. There are a number of hardwood plantations, mainly of oak and beech, and a great deal of hedgerow timber; while the policies hold many big specimen trees of silver fir, European larch, Douglas fir, oak, beech and other kinds. The outlying woods hold a great deal of

larch, some of the Japanese and some of the European species, and some again of the hybrid between them, which has been raised on this estate for over forty years; plantations have now been established of second generation hybrid larch, though it is believed that they may not manifest the remarkable vigour of the first cross. Certain woods are managed on an uneven-aged system, with a mixture of species, and much natural regeneration is obtained.

Around the Loch of Lintrathen, some six miles west of Kirriemuir, stand extensive conifer woods established on the gathering grounds of the reservoir that supplies Dundee with much of its drinking water. To the north of Kirriemuir, where the River South Esk leaves the hills, the Cortachy Estate of the Earl of Airlie includes several big woods. The principal trees grown are the Scots pine and the larches, and the estate maintains its own forest nursery and also a creosoting plant; a remarkable feature is a sawmill still operated by an overshot water wheel on the banks of the South Esk.

On the whole Strathmore is quite closely wooded, with a number of big estates devoting as much attention to timber raising as they do to their prosperous fields. The climate, with ample summer sun and moderate rainfall, is congenial, and the mines and industries of Central Scotland, not far away, provide a ready market for the timber grown. Historical records suggest that most of the good land of the strath was once oak forest and the wealth of broadleaved trees is still impressive today.

ON THE SIDLAW HILLS

Although the Sidlaw range is high and exposed, and bears much poor soil characterised by heather moors, it carries a fair density of woodland. Much of this results from the activities of prudent landowners who have put their poorest ground under trees. The Scots pine, well suited to the thin soils of the braes, naturally plays a large part; but wherever kinder conditions occur on southward slopes, oak, beech and sycamore have been planted with marked success. There are noteworthy groups of woodland around Craigton, inland from Carnoustie, and near Todhills, midway between Dundee and Forfar; several woods run up the 1,000 feet contour or even higher.

Hallyburton Forest, formed since 1948, consists of about ten blocks of land on or near the northern slopes of the Sidlaws, between Coupar Angus and Dundee. It lies partly in Perthshire and partly in Angus near the main road from Dundee to Blairgowrie, on slopes which command magnificent views of the Highland peaks, from Driesh in the north to Ben Vorlich in the west. Part of the ground was cleared woodland when taken over, the rest being heather moors. The main trees planted are the Norway and Sitka

spruces, Scots pine, and Japanese larch, but some of the better ground down in the strath has been put under broadleaved trees, including sycamore, ash, beech and poplar. Some of the plantations go up to nearly 1,100 feet elevation, but there is also a large area, called Strelitz Wood, west of Burrelton, on the floor of the strath. The total area of Hallyburton Forest, which draws its name from Hallyburton House near Coupar Angus, is 2,100 acres.

The Rossie Priory Estate, seven miles west of Dundee and just into Perthshire, is remarkable for the good growth of sycamore and other broadleaved trees, and for the diligent care given to their culture by its owner, Lord Kinnaird. Sycamore and ash spring up so readily from seed here that the artificial raising and planting of young trees is seldom necessary. All the saplings required can be found and selected in the plentiful clumps of natural regeneration throughout the woods. These are run on a 'selection system" which means that individual trees are chosen for harvesting as each reaches maturity; hence the woods as a whole show an intimate mixture of trees of all sizes and ages, from seedlings to veterans, and many species are represented. This method reproduces something of the random beauty of a wild, untended forest. The volume of timber grown in this way is at least as great as that obtained by more conventional methods, and both the main species have a high value per cubic foot for the local turnery trade. However, the woods are not natural in origin, having been formed artificially about 150 years ago; and the sycamore is not even native to Scotland. Altogether there are some 600 acres of woods on the Rossie Priory Estate. Its policy woods include fine specimens of wych elm, oak, and even sweet chestnut, while the gardens around the mansion house are famed for their beauty.

Close to Rossie Priory there is a small wood turnery, one of the few to survive in rural Scotland. Originally its machinery was turned by a waterwheel on the burn, but this has since been supplemented by steam and oil power. A variety of round and shaped woodware is made, the demand varying with the season of the year, and several kinds of timber are employed. The handles of sneds for scythes are made from ash, but the smaller hand grips are of birch. Wooden hay rakes are also made of Scottish-grown ash, though their handles are commonly of slow-grown pine from Norway. Ash, sycamore and beech are used for the short handles of industrial brushes. Ladder rungs are turned from wych elm, while other round items include bungs for barrels and plugs for rolls of linoleum, to save the edge of the material from damage. Large quantities of clothes pegs are made from sycamore, ash and beech, using ingenious powered machinery; the logs are first sawn into squares, then turned to a

rounded outline, slotted, dried in a kiln, and finally polished with wax. At one time large sycamore rollers were made for the jute mills of Dundee.

In Dundee itself there are several large sawmills and turneries, most of which produce finished goods required by local industries and the textile trade. For example, birch bobbins are made by intricate automatic machinery that turns them to shape and bores out the central hole. Other timbers used for spools and bobbins are sycamore, beech, elm, and ash. Shuttles are also made for looms, but the timber favoured for these is persimmon, imported from America. Much home-grown timber also goes into packing cases for various export trades.

On the north-west of the city the Dundee Corporation owns the large Camperdown Estate, which includes fine specimen trees in its policies, good stands of mature hardwoods, and some thriving young stands of Japanese larch, Scots pine, Sitka spruce, and beech. A nursery is maintained for the supply of young trees.

EARLY FORESTRY IN STRATHMORE

The first accounts that we possess of the planting and tending of forest trees in Scotland come from the records of Coupar Abbey, the ruins of which can still be seen at Coupar Angus in Perthshire, on the borders of our region. About the year 1460 the monks had matters well organised, and we can even name an early forester, William Blair, who held the office of cellarer; he planted ash, birch, willows, and osiers along the edges of the marshes. Leases granted by the Abbey to tenant farmers included a clause that, rendered into modern English, ran:

> 'And the said . . . shall put the land to every improvement in his power in building and fencing and planting trees, that is ashes, osiers, birch, willow, and broom, with hawthorn fences and protection for them. . . .'

The young trees required for this purpose were raised by the Abbey gardeners in eleven nursery beds, each 24 feet long, until they were four years old and ready for planting out.

The choice of tree species is interesting; they are all kinds that coppice easily, and the small poles and supple twigs that they produce were probably used locally for firewood, fencing, hurdle-making and basketry. Ample big oak for building could still be got from the Abbey's forests in Glen Isla, but it was needed only occasionally, whereas there was a steady call for the other material.

These Coupar Abbey records also show how the coppicing of the natural oak woods came to be organised. In 1471 one Andrew

Hughson was appointed Forester-General of the Forest of Campsie, on the Tay. He split the forest into four parts, each with a tenant. Gradually walls were built, first around the whole forest to keep out cattle, then across it so as to split it into four quarters; this task was completed by 1551. Each quarter was worked in turn, so that three-quarters were recovering while one-quarter was being cut over. From such beginnings sprang the practice followed on many large estates, such as those of the Dukes of Atholl and Montrose, of dividing their natural oakwoods into twenty or twenty-five sections; each was cut in turn, then given twenty years or so to recover. The produce – firewood, fence poles, and tan bark – was very valuable, and brought in a steady annual income right down to the nineteenth century.

As early as 1171 A.D. King William the Lion had given the monks of Coupar timber for their buildings. In 1470 their estates included the Forest of Forter in Glenisla, and their keepers were expressly permitted to depasture cattle in those woods. By inference we can say that the cattle of the common folk were kept out; but the introduction of sheep, and the breakdown of monastic control after the Reformation, led eventually to the disappearance of this forest. The hamlet of Forter can still be found on the map two miles west of the modern Glenisla Forest, which may well include some of the old monastic lands.

The Hag-Cherry (*Prunus padus*) and the Scots Whitebeam (*Sorbus intermedia*)

Anemones, they say, are out
By sheltered woodland streams
With budding branches all about,
Where Spring-time sunshine gleams
Marion Angus

PLANT LIFE

BY DR. C. H. GIMINGHAM

THE North East of Scotland presents today a patchwork of different types of vegetation. In this lies much of its beauty, and the unrivalled interest of its plant life. The diversity of the coastline, including rocky and sandy shores, cliffs, dunes and salt marsh, and the variety of its mountainous hinterland with glens, plateaux and peaks have always been part of its character. Between these limits, however, in the North East lowlands and foothills, the patterns typical of today are of relatively recent origin. Widespread forest and peat bogs once covered much of this country, and even when forest clearance began in earnest only a small part of the area was cultivated, while much of the rest became heathland. Today, the

lowlands are largely devoted to agriculture, but interspersed among the fields is a surprising wealth of other kinds of vegetation – fragments of woodland, heath and bog, small lochs and swamps. The uniform expanses of heath and moor are retained on the low hills and mountain slopes, and here, especially in late summer when the full glory of the purple heather is displayed, they constitute a feature of the scenery that to resident and tourist alike embodies the whole character of the region.

The present-day plant life over much of the region therefore reflects the activities of man, and except in those parts on which attention is focussed in this book, trees play rather a small part in the landscape. Although there is much of interest to be found in farmland, by roadside and even within city boundaries, the botanist often turns to the partially natural communities of wood and heath, or the little-modified coastal and high mountain habitats, to study the factors affecting the composition of our native flora. The profound influences of climate and soil are readily apparent, particularly when the relationships of our own flora to those of other parts of Britain and the nearer countries of Western Europe are considered.

PLANT LIFE IN RELATION TO CLIMATE

While many of the plants found in the North East of Scotland are common throughout Britain, a number of others show essentially northern patterns of distribution, so emphasising the northerly geographical situation of the region and its relatively cold climate. Thus, chickweed wintergreen (*Trientalis europaea*), belonging to the open pine or birch woods and heaths, has a geographical range reaching the northernmost tip of Scandinavia and in Britain is largely confined to Scotland. There are indeed many unmistakable floristic and vegetational links between the North East of Scotland and Scandinavia. Twinflower (*Linnaea borealis*), for example, although now sadly depleted in Scotland, is still present in some of our pine woods, as it is in the spruce and pine forests in Scandinavia; the blue sow-thistle (*Cicerbita alpina*), confined in Britain to a few glens and mountains on the eastern margin of the Grampians, is a common forest plant in Norway and Northern Sweden. In much the same way, affinities can be traced in the composition of whole plant communities, as in the case of heaths rich in blaeberry (*Vaccinium myrtillus*) and Scottish cranberry (*V. vitis-idaea*) which are typical both of North East Scotland and Western Sweden.

The controlling effects of climate are, however, perhaps most obvious in the hills and mountains, where high winds, lower temperatures and longer snow-lie eliminate trees and shrubs and restrict the flora to the most resistant species. It is difficult nowadays,

in view of the almost complete destruction of native woodland, to say just where the upper limit of forest lies in this part of Scotland. From circumstantial evidence, however, it has been estimated at between 2,000 and 2,500 feet; above this lie the montane heaths, and the communities of mountain-top detritus and rock ledges. The plants of these situations show dissected patterns of distribution comprising the Arctic, the Alps and other mountains of Europe, and among them are some of the rarest and most beautiful of the wild flowers of the region – such as the alpine milk-vetch (*Astragalus alpinus*), mountain avens (*Dryas octopetala*), alpine catchfly (*Viscaria alpina*), and many others. The occurrence almost at sea level of some of these mountain plants, such as the purple and mossy saxifrages (*Saxifraga oppositifolia* and *S. hypnoides*), at a few places on the north coast of Aberdeenshire and Banffshire is of particular interest. Here they grow on north-facing sea cliffs, giving clear indication of an environment similar to that on the mountains.

The plants so far selected for mention are among those members of our flora capable of flourishing in a cool, northerly type of climate. Over much of the lowland, however, the weather is hardly so severe as many southerners are inclined to believe. No part of the North East lowlands lies far from the moderating influence of the sea, and air-streams from the west, deprived of much of their rain as they pass over the Highlands, warm up to some extent as they descend. Correspondingly, the plant life of the region includes a number of species usually associated with the warmer south, and these are most often found not far from the sea, or in particularly sheltered localities. Such are the cowslip (*Primula veris*), encountered on grassy sea cliffs, behind sand dunes and in various inland localities; and the maiden pink (*Dianthus deltoides*), which contributes to the colour and diversity of dune pastures in Kincardineshire and Aberdeenshire. The numerous sheltered bays, scattered all the way along the east coast, are indeed rich sources of wild plants, including a number of 'southern' species; the Nottingham catchfly (*Silene nutans*), for example, is abundant at St. Cyrus which is the most northerly outpost of its territory, and the meadow saxifrage (*Saxifraga granulata*) an attractive spring flower on the grassy cliffs and dune pastures of east coast bays, goes up farther north than Morayshire.

PLANT LIFE IN RELATION TO SOIL

Running from the neighbourhood of Blairgowrie north-eastwards to the coast near Stonehaven is a prominent geological feature, the 'Highland Boundary fault', which divides the region into two parts. To the north the soils have originated largely from granite and

Dragging out Scots pine logs from the Alltcailleach woods

Felling a pine tree at Alltcailleach

The River Muick flowing down from snow-clad Lochnagar and
The Queen's Birkhall pinewoods, near Ballater

The turbulent River Spey, below Speymouth Forest

Deeside and the woods of Invercauld, below Braemar

Looking up the Dee over the Alltcailleach woodlands above Ballater

Home-grown logs and sawn timber at a modern sawmill near Banchory

Building a modern fishing drifter, using a frame of oak and planking of larch, all home-grown, at a Fraserburgh shipyard

Dalradian schists and slates, or extensive glacial drifts and moraines derived chiefly from the same rock-types. These, in the natural state, are acid and lime-deficient soils, lacking deep-burrowing earthworms, with the result that humus is slow to be incorporated and accumulates in a dark, relatively undecomposed layer on the surface. South of the fault, in the Howe o' the Mearns and Strathmore, lie the red-coloured soils produced from the Old Red Sandstone rocks. Although more fertile, these too are on the acid side. The most widespread soil-types of the region tend, therefore, to be associated with a rather restricted flora, with little of the richness and diversity of areas containing limestone or other 'base-rich' rocks. Typical of the acid soils of rather low fertility are the extensive heaths, often containing little but heather or ling (*Calluna vulgaris*) with its accompanying mosses and lichens, and the pine and birch woods. However, more fertile soils and outcrops of 'base-rich' rocks are not entirely lacking, and the relatively small areas which they occupy are often well-known for their interesting plant communities. Sand dunes are in many instances moderately rich in minerals, and here and there (as, again, at St. Cyrus) the cliffs are formed of basaltic lava-flows. The soils derived from these are favourable for plants such as the carline thistle (*Carlina vulgaris*), viper's bugloss (*Echium vulgare*) and many others. Crossing the lowland plain are the river valleys whose alluvial terraces provide fertile soils, often cultivated, but here and there still supporting deciduous wood with its rich ground flora of dog's mercury (*Mercurialis perennis*), moschatel (*Adoxa moschatellina*), and even in a few examples Herb Paris (*Paris quadrifolia*). Outcrops of limestone are few, but there are also scattered hills of serpentine as at Towanreef and the Green Hill of Strathdon where vernal sandwort (*Minuartia verna*) grows, and the Coyles of Muick which provide an inland habitat for sea pink (*Armeria maritima*). Finally, in the mountains, small exposures of calcareous schists, so famous in the Breadalbane range, bring together a rich collection of rare arctic-alpine plants, including the small gentian (*Gentiana nivalis*), mossy cyphal (*Cherleria sedoides*), rock speedwell (*Veronica fruticans*), and *Saussaurea alpina*.

SAND DUNES

Further detailed treatment of the strictly maritime and high mountain plant communities is beyond the scope of this survey, but something more must be said about the sand dunes which line the sandy shores from the Tay northwards as far as Montrose and St. Cyrus, from Aberdeen to Collieston, in the neighbourhood of Rattray Head, and scattered along the coast of the Moray Firth. The activity of the plants themselves is responsible for the accumulation

and stabilisation of these dunes. Small hummocks of sand on the foreshore, gathered by annuals such as saltwort (*Salsola kali*), sea rocket (*Cakile maritima*) and orache (*Atriplex spp.*) are invaded by the sea couch-grass (*Agropyron junceiforme*). This is a perennial plant and establishes low dunes, soon to be invaded by marram grass (or 'bent', *Ammophila arenaria*) which is the main dune-builder, possessing vigorous horizontally and vertically directed underground stems which can keep pace with the blown sand accumulated by the firm tufts of leaves. When the dune has built to its maximum height and further deposition of sand slows down, mosses, red fescue (*Festuca rubra*), ragwort (*Senecio jacobaea*) and many other grasses and creeping or rosette-shaped herbs enter and the closed turf so formed fixes the surface sand.

Sometimes, however, disturbance of the plant cover of these dunes by rabbits, fires or other agencies, may lead to 'blow-outs', when the sand again becomes liable to movement by the wind. In addition, storms may liberate new supplies of uncolonised sand from the shore, and from these sources sand may be spread out over other vegetation and soils to the landward of the dunes, or may form itself into U-shaped ridges moving slowly in the direction of the wind. At Forvie, near the mouth of the River Ythan, seven such moving dunes have been formed at various times, and have worked their way northwards under the influence of prevailing winds from the south. These 'waves' of sand have progressively inundated human settlements dating from the late Iron Age onwards, including a mediaeval village, only to expose their remains at later times. Farm land has been engulfed as the sand invaded higher ground to the north, but gradually the movement has slowed down and stopped as recolonisation by vegetation, in the way described above, has taken place. The hollows lying in between the ridges are eroded by the wind, until the sand surface is low enough to be moistened by a permanent water-table. Here an interesting 'dune slack' vegetation develops, in which jointed rush (*Juncus articulatus*) is often dominant, and numerous plants of rather localised distribution occur – as, for example, the curved sedge (*Carex maritima*).

When, under the influence of developing vegetation, further movement of sand virtually ceases both on the old dunes and on sand spread out over the adjacent countryside, this is not the end of change in the vegetation. Plants particularly associated with life in the rather specialised habitat of unstable sand begin to disappear, while others typical of pasture or heath gradually take their place. If the sand is moderately rich in lime, or if grazing is relatively intensive, dune pasture results: here amongst many different grasses a rich selection of flowers may be found, including the Scottish

bluebell (*Campanula rotundifolia*), bloody cranesbill (*Geranium sanguineum*), and kidney vetch (*Anthyllis vulneraria*). Where, however, the sand has little lime and is acid in reaction, sand sedge (*Carex arenaria*) and heather are the chief plants in a dune heath. Towards the north of the Forvie sands the dune heath includes also crowberry (*Empetrum nigrum*) and many kinds of lichens, and takes on a strong resemblance to heaths on the dunes along the coast of Jutland.

Scattered bushes of hawthorn (*Crataegus monogyna*), burnet rose (*Rosa spinosissima*), other wild roses and various shrubs in dune pastures, suggest that in the absence of burning and grazing these communities would in time pass to scrub and then to some form of woodland. In all probability dune heaths would follow a similar pattern of change.

NATIVE VEGETATION OF THE NORTH EAST LOWLANDS

There is excellent evidence that before the introduction of settled agriculture and other reasons for forest destruction, the predominant vegetation of the whole lowland area and foothills consisted of the several types of native woodland. Interspersed in these were the lochs and peat bogs, within which the continual rain of pollen from the trees has been preserved, serving as a record of the composition of the forest at former times.

Using the modern techniques of analysing the pollen content of samples from borings taken in peat bogs, S. E. Durno, of the Macaulay Institute for Soil Research in Aberdeen, has provided striking information on the composition of the native forests of the North East. Among the sites he has described are some which in the past were rich in Scots pine (*Pinus sylvestris*) and birch (*Betula*), belonging to what has been called the native Caledonian pine forest. But in this region, forests rich in pine seem to have been restricted, at most periods, to the more northerly slopes and glens of the eastern Grampians, as, for example, Glen Muick and Glen Tanar. Towards the south, in the foothills surrounding the Howe o' the Mearns and Strathmore, the chief associate of birch in the past was alder (*Alnus glutinosa*), with smaller quantities of wych elm (*Ulmus glabra*) and oak (*Quercus*), and only a little pine. So while the Caledonian pine forest occupied parts of the uplands to the north, much of the southern portion was clothed with forests of deciduous trees.

REMNANTS OF NATIVE WOODLANDS

Although so little is left of former natural vegetation and what there is has no doubt been altered almost beyond recognition, knowledge of the composition of forests in former times enables us to recognise fragments of woodland today which at least bear some

resemblance to the native types Such are the small oakwoods, mainly in the river valleys. On Deeside, for example, oakwood is to be found on Craigendarroch (a Gaelic name meaning 'rock of the oakwood') near Ballater, at Dinnet, Crathes and one or two other localities nearer Aberdeen, and even though in most of these there are signs that some at least of the oak trees were planted, they probably give a fair idea of the former plant life along the lower stretches of the main valleys. Where the soil is a good brown forest soil, well mixed by earthworms, hazel (*Corylus avellana*) contributes a shrub layer, sometimes mixed with rowan (*Sorbus aucuparia*), gean (*Prunus avium*) and bird cherry (*Prunus padus*) – the latter a particularly characteristic and showy shrub or small tree of the North East in woods, copses, hedgerows and streamsides. Beneath these the wood floor may in early spring be white with wood anemone (*Anemone nemorosa*), and included in the carpet of herbaceous plants are dog's mercury, celandine (*Ranunculus ficaria*), primrose (*Primula vulgaris*), earthnut (*Conopodium majus*) and even in a few places moschatel and wood sanicle (*Sanicula europaea*) – plants which are characteristic of the richer deciduous woods on the calcareous soils of the south.

Some of the oakwoods are found on more acid soils, where below the canopy blaeberry grows abundantly, with mosses typical of heaths and pine-woods, such as the robust *Rhytidiadelphus triquetrus* and the beautiful feather-like *Ptilium crista-castrensis*. Birch trees (of both species), *Betula pubescens* and *B. pendula* (*verrucosa*) are always common among the oaks, and today over much of the North East Lowlands birch is the only broad-leaved tree of regular occurrence, sometimes representing all that is left of a woodland from which alt usable timber has been extracted, and sometimes colonising abandoned heath, grassland or swampy ground, producing scrub or low woodland. On the drier, acid soils, heath plants grow under the birch trees, often with abundant chickweed wintergreen; elsewhere a grassy flora develops, with dominant creeping soft-grass (*Holcus mollis*). The swampy birch woods often include alder and willow (*Salix atrocinerea*) and the ground may largely be occupied by species of *Sphagnum* and other mosses such as *Climacium dendroides* and *Mnium undulatum*, themselves shaped like miniature trees. In the wetter spots, birch is entirely replaced by alder.

Another native tree is aspen (*Populus tremula*), now restricted to a very minor role in woods mainly on the higher ground, or in rough country where grazing is less intense. But the finest remnants of native woodland that the North East can boast of are the examples of Scots pine forest in the upper reaches of some of the more northerly glens and valleys of the eastern Grampians. The best known in the district is Ballochbuie Forest on Deeside, where it is still possible to

see something of the character of the Scottish version of the great North European coniferous forest. The canopy of pine and birch is here not a dense one, and since the trees are not of uniform age it is uneven and interrupted by gaps where an old tree has fallen out. Hence the luxuriance of the plant communities of the lower layers, where blaeberry grows into large hummocks and species of wintergreen (*Pyrola*), orchids such as the creeping lady's tresses (*Goodyera repens*), chickweed wintergreen and even twinflower belong. With these there is usually a vigorous component of mosses including *Hylocomium splendens*, *Rhytidiadelphus triquetrus*, *R. loreus*, *Ptilium crista-castrensis*, and leafy liverworts in addition.

Scattered under the pines are bushes of juniper (*Juniperus communis*) which perhaps once constituted a much more abundant shrub layer than it does today. It is undoubtedly very susceptible to burning and grazing and its distribution in this area is consequently much restricted. Its former role, however, can be judged from the few sites where it is still prominent, and among these are some interesting hill birch woods, of which examples occur in the valleys of the Dee and Gairn where birch ranges beyond the present limits of spontaneous pine – as no doubt was also the case in the past when, judging from Scandinavian comparisons, the upper altitudinal limits of pine would be exceeded by a fringe of scrubby birch with juniper.

BOGS

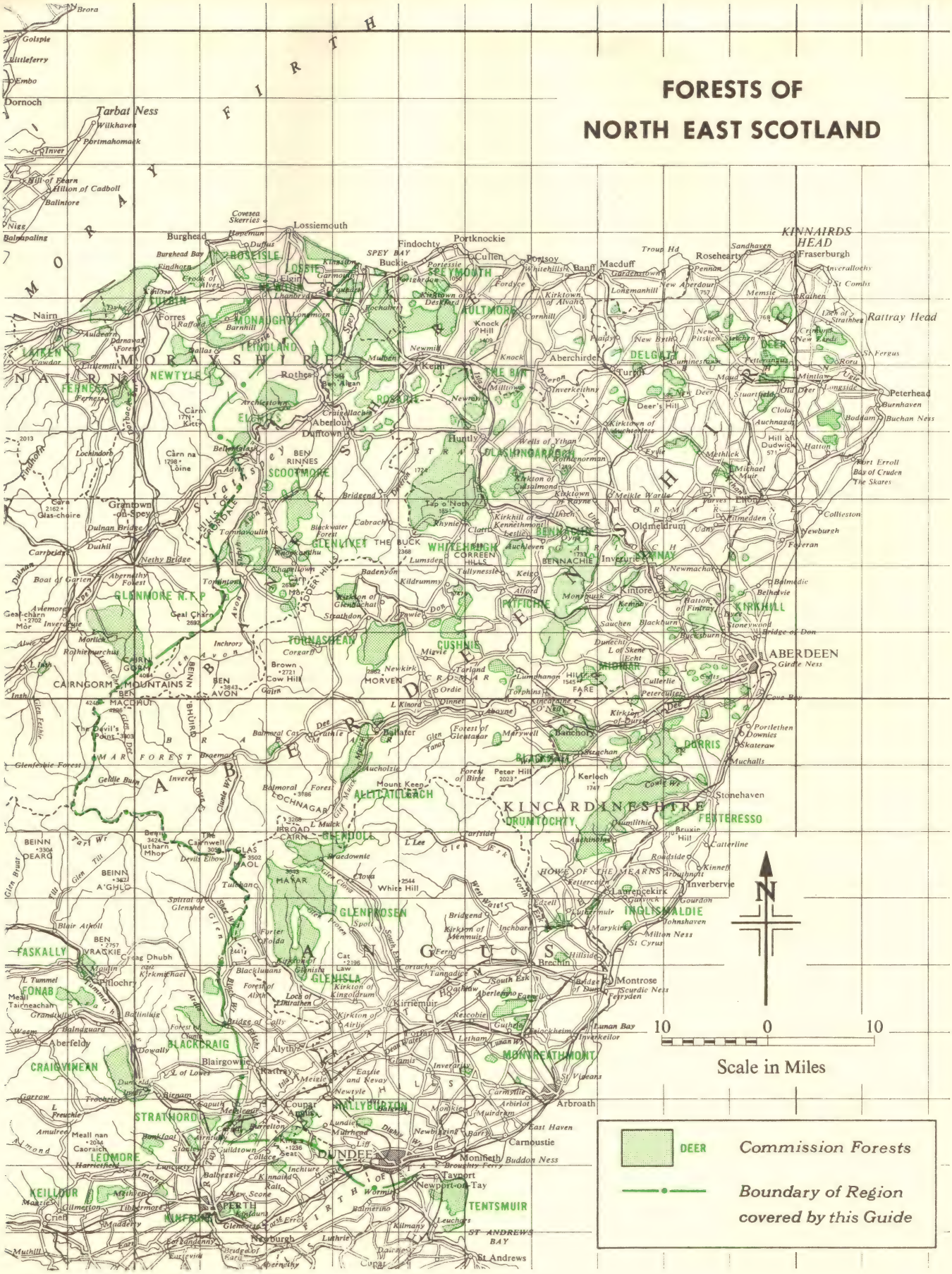
Peat bogs, once extensive and well scattered over the district from the hills surrounding Strathmore in the south to New Pitsligo in the north, have mostly now been reclaimed for agriculture or drained and cut over for fuel. Drainage puts a stop to the building up of peat, and the surface is then colonised by heather, but in the more low-lying regions areas of wet heath, cotton-grass (*Eriophorum*) bog and small patches of still actively growing *Sphagnum* bog illustrate the communities which in the past built up the deposits of peat. In the wet heaths, cross-leaved heath (*Erica tetralix*) is the chief plant, often associated with crowberry and the tall erect moss *Polytrichum commune*. This grades into examples of cotton-grass bog where *Sphagnum* moss becomes important, and from these to a vegetation composed of hummocks of other *Sphagnum* species set in a series of pools and channels occupied by pond weed (*Potamogeton polygonifolius*), sedges (*Carex* spp.) and bladderwort (*Utricularia minor*). The latter bears on its leaves small bladders which trap aquatic animals, and amongst the *Sphagnum* of the hummocks other insectivorous plants are found – butterwort (*Pinguicula vulgaris*) and sundew (*Drosera rotundifolia*). On the drier dome of the hummocks

bog myrtle (*Myrica gale*) or heather and perhaps even seedlings of pine may become established.

HEATH AND MOORLAND

Attention has so far been concentrated on the plant life of areas which might resemble the natural vegetation of times before man's interference became pronounced. But far larger areas are occupied by plant communities to a greater or lesser degree under the control of man. In the North East of Scotland perhaps the most striking of these are the heaths, which are used as hill grazings and grouse moors. These are heather-covered slopes or flats on which tree colonisation is prevented partly by grazing animals, and partly by regular burning. Heather is the staple food for grouse and an important part of the diet of hill sheep, but its value and productivity decline with age. Old heather becomes leggy and its top-heavy branches sag to the ground, especially under the weight of snow. This opens up gaps in the canopy which can be colonised by other plants. So it has become customary to burn the heather to prevent it reaching this degenerate stage, to initiate new young growth, and to maintain a dense even canopy. Only small patches or strips are burned at a time, so that a moor consists of a patchwork of stands of heather, each patch of uniform age, but with a considerable variety of ages represented in the different patches. Normally it is not good practice to let any patch exceed 15 years in age, nor, on the other hand, to burn more frequently than once every 8–10 years.

The result of this treatment is not only to provide suitable food for sheep and grouse, but to reduce the variety of plant life on the heaths and moors and to make for uniformity. Even so, however, several different types of heath can be recognised. Among these are heaths rich in bell-heather (*Erica cinerea*), which flourishes best on the drier, more freely drained soils and the upper parts of slopes, and reappears more rapidly than heather after burning, sometimes achieving a temporary dominance; others are rich in blaeberry and Scottish cranberry, with luxuriant mosses carpeting the ground; some belong to slightly richer, less peaty soils in the mountain foothills where bearberry (*Arctostaphylos uva-ursi*) is abundant, with needle-whin (*Genista anglica*), intermediate wintergreen (*Pyrola media*) and other interesting associates. On the wetter slopes deer-grass (*Trichophorum caespitosum*), cotton-grass (*Eriophorum vaginatum*) or purple moor-grass (*Molinia caerulea*) are often abundant with the heather, and among them on the higher ground may be found the cloudberry (*Rubus chamaemorus*). Many of these heaths contain other attractive plants such as the club mosses (*Lycopodium clavatum* and


FORESTS OF
NORTH EAST SCOTLAND
MORAY FIRTH
Brora
Golspie
Littleferry
Embo
Dornoch
Tarbat Ness
Wilkhaven
Portmahomack
Inver
Hill of Fearn
Hillon of Cadboll
Ballintore
Nigg
Balnapaling
Cowsea Skerries
Lossiemouth
Burghead
Burghead Bay
Findhorn
Findochty
Portknockie
Cullen
Portsoy
Whitehills
Banff
Macduff
Gardenstown
Troup Hd
Sandhaven
Rosehearty
Pennan
Fraserburgh
KINNAIRDS HEAD
Inverallochy
St Combs
Rattray Head
Memsie
Rathen
Loch of Strathbeg
Crimond
New Pitsligo
Strichen
New Leeds
Mintlaw
Lonmanhill
New Aberdour
Aberchirder
Turriff
Delgatie
Auchterless
Rora
St Fergus
Maud
Stuartfield
Old Deer
Longside
Peterhead
Burnhaven
Buchan Ness
Boddam
Cruden Bay
The Skares
Port Erroll
Hill of Dudwick
Hatton
Ellon
Methlick
Michael Muir
Collieston
Newburgh
Foveran
Oldmeldrum
Inverurie
Kintore
Newmachar
Belmedie
Belhelvie
Kirkhill
Bridge of Don
ABERDEEN
Girdle Ness
Nairn
Auldearn
Dalnawart Forest
Forres
Rafford
Dyke
Findhorn
Lochindorb
Carn na Caim
Carn na Saobhaidhe
Carn Dearg
Carn Mor
Dava Moor
Carn Daimh
Carn Ban
Carn Glas-choire
Grantown-on-Spey
Dulnan Bridge
Duthil
Carrbridge
Nethy Bridge
Boat of Garten
Abernethy Forest
Tomintoul
Glenlivet
Glenmore N.F.P.
Geal-charn Mor
Inverdruie
Aviemore
Rothiemurchus
Loch an Eilein
Loch Morlich
Cairngorm Mountains
Ben Macdui
Cairn Gorm
Ben Avon
Beinn Bhuird
The Devil's Point
Glenfeshie Forest
Geldie Burn
Inverey
Braemar
Mar Forest
Balmoral Forest
Dee
Crathie
Balmoral Castle
Ballater
Glen Muick
Glen Tanar
Forest of Glentanar
Marywell
Banchory
Birse
Aboyne
Dinnet
L Kinord
Lumphanan
Torphins
Kincraigie
Kirkton of Durris
Durris
Portlethen
Downies
Skateraw
Muchalls
Cove Bay
Cullerlie
Petercullen
Sauchen
Blackburn
Durnechty
L of Skene
Echt
Midmar
Tarland
Cromar
Corgarff
Tornashean
Gushnie
Morven
Newkirk
Mayar
Brown Cow Hill
Ben Avon
Inchrory
Avon
Glen Avon
Glen Builg
Glen Feshie
Glen Geldie
Glen Quoich
Glen Derry
Glen Lui
Glen Ey
Glen Clunie
Glen Callater
Glen Muick
Glen Tanar
Glen Dee
Glen Gairn
Glen Nochty
Glen Isla
Glen Prosen
Glen Clova
Glen Doll
Glen Lee
Glen Esk
Glen Tilt
Glen Bruar
Glen Shee
Glen Ericht
Glen Garry
Glen Tromie
Glen Truim
Glen Feshie
Glen Einich
Glen More

L. selago) and the lesser twayblade (*Listera cordata*). They may also include undesirable species such as bracken (*Pteridium aquilinum*), the spread of which may be attributed partly to long continued grazing by sheep alone, and partly to badly managed burning.

MAN-MADE HABITATS

Other communities largely controlled by man include the forest plantations described in detail in other parts of this book. Owing to their density and uniform age plant life under their shade is often restricted, particularly in the case of conifers. The forest fences do, however, provide good protection from deer, sheep, and rabbits, and open spaces such as rides are often rich in plants that are scarce elsewhere.

The beech (*Fagus sylvatica*) has in the past been widely planted in the region and regenerates freely in the North East, often producing some fine woods. Where the canopy is not too dense a grassy flora may develop, dominated by the creeping soft-grass, but where the shade is deeper and the accumulation of leaf-litter greater the chief plants are wood sorrel (*Oxalis acetosella*) and bramble (*Rubus fruticosus*). On the more acid soils even blaeberry may be a characteristic plant of beechwoods.

A further set of wild plants of great interest comprises the weeds of arable land. A comparison of the weed flora on the Old Red Sandstone soils lying to the south of the Highland Boundary Fault with those of the heavier, darker and more acid soils to the north, shows certain differences. To the south, for example, poppies (*Papaver dubium*) show up among the cereals; to the north redshank (*Polygonum persicaria*) and corn marigold (*Chrysanthemum segetum*) are numerous, besides the many weeds common to both types of soil.

In the space of a short account it is only possible to focus on selected points of interest. Little has been said, for example, of the colourful riverside plants (among them, on river shingle, the lupin, *Lupinus nootkatensis*, which contributes vivid splashes of blue to the landscape in June), or of the aquatic and semi-aquatic vegetation within and around the lochs (including plants of great botanical interest such as quillwort, *Isoetes lacustris*; unusual rushes such as *Juncus filiformis*; and in the swampy woodland orchids such as the coral-root, *Corallorhiza trifida*). But perhaps some indication has been given of the diversity of plant life in the North East, which confers upon the region unique potentialities as a natural laboratory

in which to investigate the influences of climate, soil, animals and man upon vegetation. Herein lies the importance of efforts to conserve our regional flora, and to return to a pattern of land-use in which an adequate part is played by forests, once the predominant native type of vegetation.

Red Deer Stags

Cowslips soon will dance in rings
Above the brimming dew;
Nesting birds will preen their wings
And learn their tender notes anew

Marion Angus

WILD ANIMALS AND BIRDS

BY DR. ADAM WATSON

THE North East contains a remarkable variety of country, some of it as beautiful as anywhere in Scotland, and animal life is also rich and varied. Half of this countryside is lowland and half highland. The place names in the mountains are Gaelic, and some Gaelic was spoken till this century. The mountain tops are the only large area of virgin country that has remained untouched by man, and on their lower slopes, big forests of natural pine and birch have survived The lowlands, still the stronghold of the Scots tongue, have been farmed for a very long time, and hold one of the biggest areas of good farmland in Scotland.

The highest Scottish mountains (except for Ben Nevis) lie here, and the largest area at over 3,000 feet. Their high plateaus look like stony tundras in the Arctic, with many alpine and arctic plants. At over 4,000 feet, plants become scarce, the ground is mostly covered with boulders and gravel, and a few snow patches lie all the year round.

Ptarmigan are the commonest birds between 2,500 and 4,000 feet. In winter, when their plumage is white, they scratch through the snow to reach their food of heathy plants, and also dig into snow-drifts for roosting. Their numbers fluctuate greatly (from one bird per 14 acres in a good summer to one per 40 acres) but there are usually thousands on the high Grampian peaks. They were prized by Victorian sportsmen, but are little disturbed nowadays.

A few pairs of snow buntings nest in the Cairngorms among the boulders on the plateaus and in the corries, where the cocks often sing from the granite crags. Thousands more come from the Arctic to spend the winter on the lowlands, coasts, and hills.

Dotterel nest (about one pair per 200–400 acres) on the mossy and grassy plateaus of the Cairngorms and Angus hills. Other breeding birds are golden plover, wheatear, and meadow pipit, but these are more common lower down. In autumn, after the young can fly, many wheatears and pipits move up to the highest tops, and occasional snow bunting live at the summit cairns, probably attracted by the crumbs left by climbers. Red grouse breed rarely at 3,000 feet, but fairly commonly above 2,500 feet where the heather is not too stunted. Dippers stay all the year on the hill streams, at times going up to 4,000 feet.

Golden eagles often hunt over the mountains, some feeding largely on ptarmigan. They have their highest eyries up to 3,000 feet. The fox usually lives lower down but often hunts for ptarmigan, and may be seen up to 4,000 feet even in the heart of severe winters. The highest fox dens I have seen in the North East are at 2,700 feet.

There are no more than two mountain hares per square mile on the Cairngorms, mostly below 3,000 feet, but occasionally on the highest summits. I have seen shrews running over the snow at 3,500 feet in winter, and in summer both pygmy and common shrews occur right to the highest tops. A short-tailed vole and a wood-mouse have also been trapped on the high tops, and the short-tailed vole is sometimes common on grassland at over 3,000 feet. The stoat will sometimes visit the summits. Water-voles live wherever there are grassy banks on the hill burns, commonly up to 2,100 feet, and occasionally higher.

Common and black-headed gulls come in summer to the high

hills, while in autumn and spring migrating greylag and pink-footed geese fly over, especially through the passes of Lairig Ghru and Lairig an Laoigh. A few goldeneye ducks and whooper swans also migrate through the hills, stopping briefly on the high lochs. Hundreds of redwings and fieldfares from Scandinavia cross the Cairngorms in October, and I have also seen such unexpected migrants as a robin and yellowhammer at over 3,000 feet, and a white-fronted goose. Swallows and house-martins often move over the hills, and in summer scores of swifts may gather. A snowy owl spent the summer of 1952 and 1953 on the Ben Macdhui plateau; this owl normally lives only on arctic tundras where lemmings are common.

Brown trout have been caught higher here (at 3,050 feet in Loch Etchachan) than anywhere else in Britain. A few frogs occur in wet places up to 3,400 feet, and spawn up to 3,000 feet.

LOWER HILLS AND GLENS

Hills and moors cover half of the North East, almost reaching the sea near Buckie and Aberdeen, and many of the big woods are on former moorland. The grassy floors of the glens occupy a small area, used mainly for hill farming. The many red deer, red grouse, and mountain hares on the moors form an important attraction for sportsmen. Heather is the main food of grouse and hare, and is much eaten by deer and blackface sheep. It grows best on acid soils where rainfall is light and drainage good. Mosses and grasses become more common farther west towards the Cairngorms, and on higher hills where rain is heavier. Areas used as deer forests lie farther west or higher up than grouse moors; blackface sheep graze on both areas. The heather is burned to remove rank old plants and to allow growth of the more nutritious young heather which is preferred by sheep, deer, and grouse.

Most of this moorland is man-made, and is maintained by fires, heavy grazing, and destruction of seedling trees. The heavy deposits of peat on the poorly drained places are being rapidly eroded by fires, wind, and water. The peat contains abundant roots of pine, birch and often juniper up to 2,000 feet, with many roots up to 2,200 feet, and in sheltered valleys of upper Deeside occasionally even up to 2,700 feet. Many place names such as Glen Guisachan and Hill of Saughs show that pines (Gaelic *guibhais*) and willows (Scots, saugh) grew high on the hills in the past. The climate may have changed slightly since, but the old pines in the Cairngorms and Deeside extend even today up to 2,000 feet, with occasional trees up to 2,200 feet and a few even higher; a stunted bush has been found at 2,800 feet. The vigorous regeneration of birch and pine in such

places as Moor of Dinnet, Gairnshiel, and Birse shows that these moors would soon change to forests and scrub if left alone. But the moor is maintained by grazing and burning, and only in a few places are the trees gaining ground.

On the deer forests too the pine woods are dying, though plenty of seed falls; for there are too many red and roe deer and when these beasts come down into the glens, especially during hard winters, they graze all the seedlings, except on cliffs and on roots of fallen trees too high for them to reach.

The commonest bird in the old pine forest is the chaffinch. There are many coal tits and goldcrests, and smaller numbers of mistle thrushes, wrens, tree-creepers. Robins, bullfinches, siskins, redpolls, great spotted woodpeckers, crows, woodcock, wood pigeons, capercailzie and blackgame are also found. For much of the winter, the redpolls, siskins, thrushes, robins, woodcock and pigeons go away. In summer willow warblers are almost as common as chaffinches where there is good undergrowth, and there are also smaller numbers of tree pipits, redstarts, spotted flycatchers and cuckoos. Crested tits are common in the Banffshire pine woods along the Spey and have spread almost to the Aberdeenshire boundary near Huntly. Afforestation will probably help them to spread farther. Crossbills are common in the old forests, their numbers varying greatly from year to year. A few tawny owls, long-eared owls and sparrow hawks breed. All these birds also occur in the old birch forests, except for the crossbill, crested tit and capercailzie. Redpolls, woodcock and long-tailed tits are commoner in the birch than in the pines, and willow warblers are commoner in the birch than are the chaffinches.

On the better grouse moors, where the heather is carefully burned in small fires, grouse numbers vary from one breeding pair per 5 acres in a good year to one pair per 20 acres. On the Cairngorm deer forests, they reach a peak density of only about one breeding pair per 20 acres and become very scarce in poor years. Grouse also occur on isolated moors near the sea, as at Forvie, Fisherie, Bin of Cullen, near Stonehaven and near Dundee. The number of grouse shot in Angus each year varies from 15,000 in a poor year up to 50,000.

Mountain hares are commoner on these moors than anywhere else in Scotland, and many are shot or snared (about 5,000 per year are sent to game dealers in Angus alone and many others are eaten locally). On the best areas, such as the Lecht and Gairnshiel–Corndavon, hares may reach a density of one per acre, and vast expanses of moorland hold one hare per 5 or 10 acres. They are commonest between 1,000 and 2,500 feet. Like the ptarmigan, they turn white in winter.

The quiet village of Strathdon, looking towards the church and the Tornashean woodlands

Kirkhill Forest, on the main road from Aberdeen to Huntly

The Cabrach Pass through Clashindarroch Forest, with the Tap o' Noth beyond

A forest road through the heart of Clashindarroch Forest, the Kirkney Glen

A bend of the Spey below Aberlour, showing thriving broadleaved woods on a private estate

Larchwoods in Clashindarroch Forest, the Lag Glen

Seen from across the Don, the Roquharold woods of Kemnay Forest, near Inverurie

Winter sunshine in the pinewoods of Auchernach, Tornashean Forest, Strathdon, with the Ladder Hills beyond

Red Deer Hinds and Calves

Red deer are probably as common on these hills as anywhere in Scotland. The stock is roughly one deer per 20 acres, and only about 10 per cent are shot each year, a figure that could probably be increased without affecting the size of the stock. About 2,000 are shot annually in the four counties. At least half the calves die each year and many hundreds of deer starve in hard winters (at least 400 died on Mar Forest alone in 1947). Many deer have settled on grouse moors, where they are a great nuisance to farmers. Recently a Red Deer Commission has been set up to control their numbers.

Roe deer range the moors, in summer and autumn reaching 2,500 feet in the Cairngorms. In some places they are on the moors more often than in the woods, even in winter. They are also found in all the woods from the lowlands to the hills, and are more common and widespread than most people realise.

Brown hares go far up the glens, in Angus reaching 1,100 feet near grassy pastures, and on Deeside occasionally 1,200 feet, and rarely 1,400 feet. Before myxomatosis, rabbits were abundant up to 1,200 feet, and in some glens even at 1,800 feet, but at these heights they were often decimated in hard winters.

Foxes reach a density of at least a pair per 5 square miles on the deer forests, and though less common on grouse moors they are widespread there. A bounty of 10s. per tail, paid by the agricultural authorities, encourages trapping and shooting, but is ineffective in reducing numbers on the deer forests. On the grouse moors, where there are more gamekeepers, control measures may be keeping foxes scarcer than they would otherwise be. Fifty years ago wild cats were very rare but they have increased, in Deeside since the early 40's, and in Eastern Angus within the last five to ten years.

Most of them are on the lower glens and moors, though some live up to above 1,500 feet on Deeside; only rarely do they move into the lowlands. The present forester at Glen Doll, Mr. D. Johnson, has a tame cat which is obviously of wild parentage. Stoats and weasels are both fairly common on the hills, moors and lowlands. Ermine stoats, with white fur and black points, are commonly seen in winter.

When trees are planted on the moors, the prevention of burning and the growth of good shelter and grass food provide excellent conditions for the short-tailed vole. Numbers sometimes reach 100 or more per acre in young plantations, and this attracts predators such as short-eared owls and kestrels. Bank-voles and wood-mice also occur commonly, sometimes well out on the lower moors, but usually in lesser numbers than the short-tailed vole. However, in farmland the wood-mouse is much commoner than the short-tailed vole, while in older woods the wood mouse and the bank vole are the prevailing kinds. The brown rat lives mainly in or near houses and farmsteads, but occasionally wanders up to 1,500 feet elevation in the Cairngorms. Moles occur throughout the North East, especially on undisturbed pastures, and reach 2,200 feet on tiny patches of good grass. Badgers are widespread though rare in the woods, but afforestation will probably increase the stock. Pine martens and polecats both lived in the glens last century but were hunted until they became extinct.

Adders are rare in the lowlands but common in the glens up to 1,500 feet and occasionally up to 2,000 feet. Lizards are numerous on the lower hills and glens and in the old pine forests up to 2,000 feet. Frogs are abundant, and toads and newts widespread but less common.

There are about two dozen pairs of golden eagles in the four counties, mostly on the deer forests but a few lower down. Trapping, shooting and poisoning undoubtedly keep down the number of breeding predatory birds on the grouse moors. Probably less than ten pairs of peregrine falcons nest inland, even fewer buzzards nest, and merlins are uncommon though widespread. Hen harriers have bred in Banff, Aberdeen, and Angus, but are still uncommon in summer; larger numbers arrive in autumn to spend the winter on the moors. The hen harrier is also being helped by afforestation, which often results in more voles for food, long vegetation for nesting in, and protection from human persecution.

Blackgame are common on the lower moors and in the open birch and pine woods. Curlews and golden plovers reach densities of a pair per 50 acres on the moors, and snipe are common in the bogs. Meadow pipits are very common, and also skylarks on the more

grassy moors and hill farms. Peewits are most abundant on undisturbed grassland; a few nest up to 2,100 feet. Though greenshanks migrate through this region, probably no more than eight pairs nest in the four counties, in high Cairngorm glens. Redshanks are more common, nesting in many hill, lowland, and coastal bogs as well as along the rivers. Mallard and teal nest up to 2,000 feet on the boggy moors, as do small colonies of common black-headed and lesser black-backed gulls.

Crows are widespread, nesting from the coastal cliffs to the highest glens at 2,000 feet, and their numbers are only temporarily affected by the intensive trapping, poisoning and shooting done by gamekeepers. Both carrion and hooded crows freely interbreed, producing hybrids varying from jet black through various mixtures to pure grey 'hoodies'.

THE LOWLANDS

In the past this lowland was mainly moor, wood, scrub and bog. The moors and bogs have nearly all been drained and farmed, and there is hardly any natural woodland left.

The most abundant animals are those that thrive on an intensive agriculture: brown hares, rabbits, rooks, wood-pigeons, sparrows, and starlings. In Angus 10,000 brown hares per year are sold to game dealers: the figure for rabbits even now is 2,000 per week, while before myxomatosis it was 20,000 per week. There are as many rooks here (about one to every 3 acres of lowland) as anywhere in Britain, and many of the rookeries are immense: about 10 have over 2,000 nests, two have over 3,000, and one has 6,000. Nests are mostly in conifers such as Scots pine and spruce, sometimes even in plantations only 20 years old. Rooks nest in small numbers up the main valleys to 1,000 feet. After breeding, many of them live on hill pastures for some weeks, but most stay on the lowlands.

Wood-pigeons breed in hedges and many kinds of trees, but most commonly in thick plantations of Sitka spruce and Douglas fir. They reach highest density (up to 10 nests per acre of wood) in small shelter-belts or plantations near good feeding fields, and are far less common in the large conifer forests; nests have been found up to 1,750 feet. On a typical 5,000-acre Aberdeenshire estate, at least 1,000 pigeons are shot every year. Most pigeons in this area start breeding in early March and finish in late October, a longer season than in the South of England. Rooks and pigeons were both uncommon till the Agrarian Revolution and till trees were planted on private estates. As agriculture increases its yield, both become commoner, despite control measures.

In the open fields peewits and partridges have recently decreased, while the corncrake has become rare, probably as a result of intensive mechanised agriculture. However, pheasants, which nest mostly in thick hedges and wood sides, have greatly increased. Pheasants and partridges are important game birds; in Angus 10,000 pheasants and 15,000 partridges are sold to dealers each year. Other birds that have increased are the song-birds which nest in hedges and small woods and which feed on the farms. Corn buntings are numerous in the lowlands, but not on the hill farms. Skylarks are common, but the meadow pipit, which prefers thick ground vegetation to open ground, is less common. In a typical area of intensive agriculture in Aberdeenshire, the breeding density of curlews is about one pair per square mile over a variety of arable fields, permanent grass, and marsh.

Foxes are widespread but rare in the lowlands, though they have increased in the last few years. Long-eared bats, Daubenton's and pipistrelle bats all occur widely, mostly near buildings, but some long-eared bats live far into the hills, in some of the pine woods up to 1,500 feet. Hedgehogs are common in the hedgerows and deciduous woods of the North East, with smaller numbers in conifer woods, except in the old forests above 1,200 feet.

Vast numbers of finches and buntings frequent the stubble fields and stackyards in winter. Enormous flocks of starlings come at that season from Europe and live entirely off the farms. Many thousands of herring gulls then feed entirely on the inland farms, returning to the coast only to spend the night; they catch worms and insects by following the plough, and also eat potatoes, turnips, and grain. In winter many wild geese and mallard crop the pastures and eat waste potatoes and grain, while whooper swans follow the same habits.

How many birds live in farmland as compared with woodland? Typical figures per 10 acres in summer are: 7 adult birds on moorland, 20 in farmland and coniferous wood, 40 in deciduous wood, 50 in fringes of wood or scrub, and up to hundreds in gardens. In fact, the more uniform the place, the fewer the species and number of birds present.

Most lowland woods are of three kinds: conifer plantations, mixed amenity woods planted on private estates, and shelter-belts. Wherever shelter-belts occur there are many song birds, especially where the belt is near a farm. The commonest are greenfinches, linnets, house sparrows, hedge sparrows, robins, blackbirds, song thrushes, great and blue tits, yellowhammers, and wood pigeons. These birds are also common around the edges of larger plantations, wherever there are fields nearby. In gardens, all these birds (except

linnets and yellowhammers) are common, with starlings nesting in holes in buildings and old trees.

Nowadays both private landowners and the Forestry Commission are mainly planting conifers, gradually ousting those birds that like open country. At first, birds that like bushes and undergrowth increase, but they decrease once the trees have grown and the ground cover disappears. For example, soon after the trees are planted, peewits and wheatears may go away, but there will still be many skylarks, meadow pipits, and some partridges, and also grouse and blackgame if the area was a moor. As the trees grow, partridges may decrease and pheasants increase. The larks and pipits may decrease, to disappear once the trees are more than a few feet high and six or seven years old. Whinchats and stonechats, both uncommon in the North East, increase in the first few years and then decrease. Willow warblers and whitethroats increase till the trees are eight or ten years old, and then decrease. At seven to nine years, blackbirds, chaffinches, bullfinches, goldcrests and hedge sparrows colonise the plantations, and the chaffinches and goldcrests go on increasing.

When the ground cover gets sparse or disappears, wood pigeons become common, and small numbers of blue and great tits also colonise. When the trees are first thinned out, siskins and redpolls (and in Banffshire also crested tits) invade the pine and larch woods. In the well-grown pines, the chaffinch is the commonest bird, followed by coal tit and goldcrest. In the spruces, goldcrests and wood pigeons are commonest, with far fewer coal tits than in the pines. A recent study in pine plantations on heathland in East Anglia showed that in summer there was one coal tit per 3 acres and one goldcrest per 8 acres. In winter there was nearly one tit per acre in the pines, but twice as many in deciduous woods.

Well-grown plantations have little undergrowth, while the trees are too sound to have holes. This means that fewer kinds of birds can live there than in older or more open woods. But there is often a concentration of thrushes, blackbirds, robins and yellowhammers near the open spaces or rides. If there are wide enough spaces, or the canopy becomes open, crossbills, blackgame, tree pipits, redstarts and spotted flycatchers appear, and possibly nightjars. When the tall trees open out enough to allow shrubs such as brambles, rhododendron, juniper or young trees to grow, blackbirds, songthrushes, robins, long-tailed tits, hedge sparrows, willow warblers, whitethroats, wrens and pheasants again become common, with perhaps chiffchaffs and blackcaps. There are woodcock in the damp places. By this stage the plantation resembles a natural forest except that there is usually no regeneration and no dead trees. A count in

natural pine forest in North East Scotland during May 1961 showed a density of nearly seven birds per acre, much more than in nearby mature plantations with no undergrowth or regeneration, and also much more than the counts in East Anglian plantations.

Long-eared owls and sparrow hawks nest in these conifer woods, preying largely on wood pigeons, and tawny owls nest near the edge. There are no holes in the tree trunks for the owls to nest in, but they use old crows' nests. Herons also nest in plantations, sometimes in quite low pines and spruces, such as the big heronry at White Cow Wood near Strichen. Many herons' nesting trees were blown down by the severe gale of January 1953, so the herons moved elsewhere. Many North East herons nest singly or in groups of two or three, but a few heronries are bigger (White Cow Wood had 15 nests in 1945). Some nest far up the valleys, up to 1,000 feet.

In the mature pine plantations there are also capercailzies, crossbills, and occasional woodpeckers. The great spotted woodpecker became extinct in the North East about 1850, but appeared again early this century, and has now spread throughout the four counties right up to the tree-line. Capercailzies are spreading as conifer woods increase, being found throughout the pine woods from the mountains to the sea. In natural forests there is usually about one adult per 100 acres in summer, but in some lowland woods they reach higher densities. Scottish capercailzies became extinct about 1760, and the present stock was introduced from Sweden in 1837. Crossbills breed in all four counties, not only in the old pine forests but also in lowland woods and they also are spreading. Nobody has found out whether they are of the Scottish race (which has a more massive beak) or the Continental one.

Spruce plantations provides safe nesting-places for magpies and jays, and also a refuge from gamekeepers. Jays occur in the woods of Angus and South Kincardine, and are spreading. Magpies have greatly increased since the 1930's, and are now common near Aberdeen and in parts of Buchan such as the plantations near Strichen. Grey squirrels are also spreading north from Central Scotland through the woods, and have now reached parts of Angus. Red squirrels are widespread and fairly common in conifer woods all over the North East, even right up in the old pine forests. Their numbers fluctuate greatly in different years.

Siskins mostly leave the conifer woods in winter and live in birch and alder. Chaffinches and thrushes, however, leave both conifer and birch woods in winter for more open country, the chaffinches frequenting stubble fields and stackyards.

There are many fine amenity woods in the sheltered valleys of Strathmore and lower Deeside, and also along the lower Don, on

Deveronside and Speyside and in Buchan. Their chief character is variety of tree and shrub, and variety in age of tree. This, combined with good feeding grounds nearby, results in a high bird population.

In open woods, with various heights of coniferous and deciduous trees and shrubs, nearly all the common woodland birds may be found in a small area. The many holes in the old trees provide nesting-places for starlings, jackdaws, and tits, especially great tits and blue tits. Wood warblers are common in the oak woods of Ballater and Aboyne, and occasionally occur elsewhere in beech or oak in all the counties. These old mixed woods with plenty of shrubs and grass also have many wood mice and bank voles, which are scarce or lacking in dense spruce woods.

The rivers of the North East are well known for their excellent salmon and trout fishing. Sticklebacks are common in most of the lowland rivers and streams, and also the minnow which is here near its northerly Scottish limit. Lampreys are common in the slow-flowing rivers.

The goosander, a fishing duck with a saw-toothed bill, has greatly increased in spite of persecution, breeding on most of the hill streams and the main rivers; the related merganser is also increasing. Common terns breed on shingle banks far into the hills, and common sandpipers up the hill burns to a limit of 3,000 feet. Oystercatchers breed up the river valleys to a limit of 1,650 feet, and also commonly on moorland near small streams, and in arable lowland fields sometimes a long way from the river. Dippers and grey wagtails are widespread on river and stream right into the hills. The kingfisher breeds in small numbers on slow-flowing rivers such as the North and South Esk, and occasionally on the lower Dee. Otters are widespread on all the rivers, going up to over 1,400 feet. Water shrews and water voles are common on all the lowland streams.

There are many lochs, both amid the hills and in the low country. Trout are common, and sometimes pike. Char occur in Loch Builg and Loch Lee. On the lowland lochs about twelve to fifteen pairs of great crested grebes nest, here near their northerly limit in Scotland. Little grebes are common, as well as coots, waterhens, and several kinds of duck. Large numbers of wintering ducks and whooper swans come to the lochs and rivers during the winter.

There are many lowland bogs, with much long heather, rushes and dense willow and birch scrub. The birds of birch woods, such as redpoll and woodcock, are common on the bogs, together with snipe, sedge warblers, wild ducks and waterhens, and short-eared owls. Voles are also numerous. The biggest bogs are near New Pitsligo, at Loch of Strathbeg, and at Wartle near Rothienorman.

There are estuaries with sand, mud flats, and mussel beds at Montrose and Newburgh, which attract many wading birds and ducks and geese on migration and in winter. Eider ducks, four species of terns, and shelducks breed on the big stretches of sand dunes near the Ythan estuary and at Rattray Head. The Ythan eider colony is one of the largest in Britain, and red grouse also nest here near sea level. There are also many stretches of rocky coast, such as those south of Aberdeen, north of St. Cyrus, and near Banff, where many kinds of wading birds such as turnstones and purple sandpipers gather in winter and on migration. Both common and grey seals occur at sea, and occasionally visit the estuaries and harbours; the grey seal has become a nuisance to the coastal salmon fishers. A walrus appeared on the rocks near Collieston in 1954, an extremely rare arctic visitor.

There is some very fine sea-cliff scenery (cliffs of granite, conglomerate, sandstone, and slate) especially between Macduff and Rosehearty, south of Peterhead, and at Fowlsheugh near Stonehaven. These places are thronged by thousands of herring-gulls, and on the steep walls thousands of kittiwakes and guillemots, and smaller numbers of rock doves, razorbills, puffins, shags and jackdaws nest. Fulmars have colonised the cliffs since 1910, and their numbers, now running into thousands, are still increasing. Six pairs of peregrine falcons are known to nest on the coastal cliffs.

Balmoral Castle and Lochnagar

It wasna when she pu'ed the briar
Nor lauched to see the rowans' fire,
But when her e'en grew saft and sweet
At sichts ower fair and soonds ower sweet,

The whisper gaed frae hill to hill,
The very herps o' Heaven grew still;
God minded on the Wee Sma Glen,
And kenned it wasna wrocht in vain.

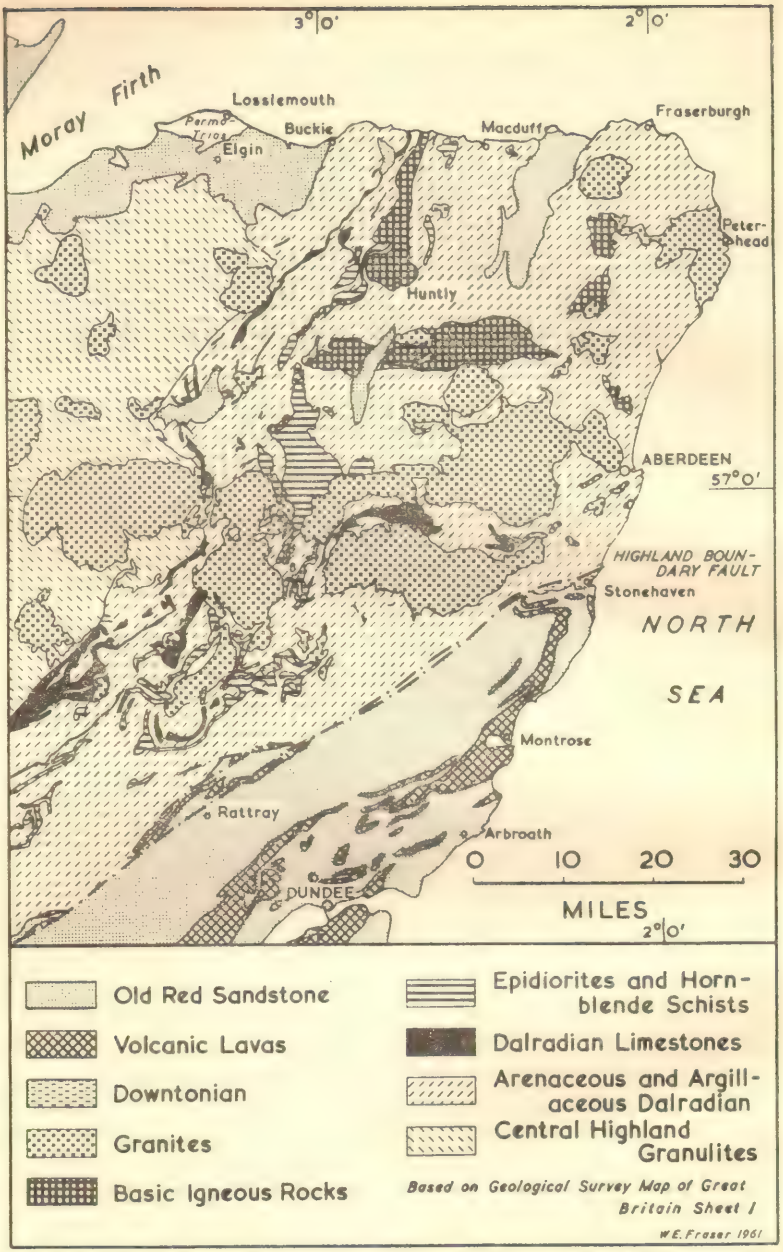
Marion Angus

PHYSICAL FEATURES AND GEOLOGY

BY DR. WILLIAM ELRICK FRASER

PHYSIOGRAPHY

North East Scotland is mainly a Highland area, dominated topographically by the Cairngorm Mountains and the Lochnagar mass; many of the hills are over 3,000 feet high and Ben Macdhui (4,296 feet) is the second-highest mountain in Britain. To the south, east, and north of the highest portion of the area, which is intersected by the upper valley of the River Dee, the height of the hills diminishes fairly steadily towards the coastal plains. The north-western margin of the area is drained by the river system of the Spey, and the southern margin by that of the Tay. The remainder of the area is drained towards the south-east by the Lunan Water, the



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University of Aberdeen

Geological Map of North-east Scotland

rivers South Esk and North Esk, and the Bervie Water; towards the east by the Cowie Water and the rivers Dee, Don, Ythan, and Ugie; and towards the north-east by the River Deveron and the Boyne Burn.

The boundary between the Highlands and the Midland Valley of Scotland follows the line of the Highland Boundary Fault (see geological map) from near Stonehaven towards Rattray. South-east of this fault, the country is comparatively lowlying and largely agricultural, though the Sidlaw Hills do range up to more than 1,000 feet.

North-west of the fault, the Highlands can be divided into two portions by a line joining Stonehaven and Buckie: to the north-east of this line, an undulating platform, largely agricultural; to the south-west, a dissected plateau in which agriculture is mainly confined to the floors of the valleys.

The plateau slopes from west-south-west to east-north-east, with the hills diminishing in height and becoming increasingly isolated towards its north-east margin. Near this margin are some of the most conspicuous landmarks of the area as a whole (e.g. Ben Rinnes, Tap o' Noth, Bennachie, and Hill o' Fare).

North-east of the margin, in the lower-lying portion of the Highland region, the most prominent features are Mormond Hill, Knock Hill, Durn Hill, and Bin of Cullen.

GEOLOGY

The geological succession and the main geological events in the area and in its immediate vicinity can be summarised as follows:

Quaternary	*Recent* rock screes, river alluvium, bog-peat, raised beach deposits and coastal sand dunes.
	Pleistocene boulder clays, with fluvio-glacial sands and gravels, covering practically the entire area.
Tertiary	Practically unrepresented except for (?) *Pliocene* gravels, found very occasionally at 350 to 400 feet in the Buchan area of Aberdeenshire.
Mesozoic	Practically unrepresented.
	Permo-Triassic desert sandstones around Lossiemouth (west of area).
Upper Palaeozoic	Permo-Carboniferous movements, slight in Scotland, but responsible for formation of gentle synclines in which the Midland Valley coal is preserved (south of area).
	Carboniferous sediments and associated volcanic rocks in the Midland Valley (immediately south of area).
	Upper Old Red Sandstone around Elgin (west of area) and south of Dundee.
	Middle Old Red Sandstone in patches north of the River Dee.
	Lower Old Red Sandstone and associated *Volcanic Rocks* in the area south-east of the Highland Boundary Fault.

Intrusion of *Basic Igneous Rocks* and *Granites* in the Highlands: the former mainly confined to the area north of the River Don; the latter far more widespread, but with their main development near the valley of the River Dee.

Main *Caledonian Orogeny*, when the Scottish Highlands were uplifted as a major mountain chain and when the whole of Britain north of Devon became a land area.

Lower Palaeozoic

Downtonian, in the Stonehaven area, resting unconformably on Cambro-Ordovician *Highland Border Series*, the latter occurring in a very narrow intermittent strip along the line of the Highland Boundary Fault.

Pre-Cambrian

Metamorphic Schists and Gneisses, mainly of the *Dalradian Series*, but including, towards the extreme west, members of the *Central Highland Granulites*. These rocks are mainly former sediments, laid down in geosynclinal troughs probably during Pre-Cambrian times, but they also include associated igneous rocks, often basic in character. After extensive metamorphism, this succession was uplifted into a mountain chain during the Caledonian Orogeny, which took place at the end of Silurian times.

The *Metamorphic Schists and Gneisses* are former geosynclinal sediments, probably Pre-Cambrian in age, and associated contemporaneous igneous rocks, all of which have been metamorphosed to form a great variety of rock-types. Two main series are represented: the *Central Highland Granulites*, in the extreme west, and the *Dalradian* rocks, which occupy the majority of the Highland area. The former are typically pale grey in colour and can be broken readily into flaggy slabs along micaceous divisional planes. The latter consist mainly of grey or rusty-grey micaceous schists and gneisses, but also include divers other rock-types: pale quartzites, grey or grey-brown clay-slates, silvery phyllites, grey knotted phyllites, rusty garnetiferous schists and gneisses, black graphite schists, and greyish-white limestones, the latter often interleaved with darker impure bands.

Various grades of regional metamorphism are developed. The lowest grades are found immediately north of the Highland Boundary Fault and in a belt stretching southwards from Macduff towards the Glens of Foudland; the highest grades occur along Deeside, along a belt near the western margin of the Dalradian, and in a belt running northwards from Ellon. Northwards from the Highland Border, progressive metamorphism is marked by the successive appearance of the minerals chlorite, biotite, garnet, staurolite, kyanite, and sillimanite (e.g. in Glen Clova); the low grade clay-slates of the belt from Macduff to the Glens of Foudland are followed to the west, south, and east by higher grade phyllites with knots of andalusite (e.g. in the Correen Hills). In the belts of

highest metamorphism, especially where minor granitic injections abound, many of the metamorphic rocks become increasingly granitic in appearance, passing by way of granitic gneisses into streaky xenolithic gneissose granite. These migmatites or mixed rocks are particularly well developed near Lower Deeside.

The most resistant metamorphic rocks are the quartzites, which frequently form high ground (e.g. Bin of Cullen, Durn Hill, and Mormond Hill). In areas of more diverse geology, the ridges are often ribbed and reinforced by quartz-rich bands. During deformation the quartzites acted as competent members, so the minor structures which they display are less intricate than those shown by both the argillaceous and the calcareous rocks. These quartzite structures can nevertheless be extremely complex: on occasion the rocks are rodded (e.g. at Cullen) or rolled into larger cigar-shaped mullions; in practically every case, the original detrital grains have been recrystallised to give an interlocking mosaic of sutured grains.

The least resistant rocks are the limestones, which are usually so poorly exposed that their outcrops have frequently to be deduced from the vegetation. The best exposures of limestone occur towards the western margin of the area in flat-lying belts at considerable elevations. In steep belts the rock is usually etched out by drainage channels; it is nowhere sufficiently extensive to produce large swallow-holes. The limestone is now worked as a source of agricultural lime at a few large quarries; in the days of slower transport, small-scale quarrying was more extensive, so that some of the smallest occurrences have been worked out completely, especially in those areas where the rock is rare and the soils are acid.

The argillaceous rocks, formerly muds but now affected by various degrees of metamorphism, are also comparatively soft, especially where metamorphism has been slight (e.g. to the south of Macduff); they become tougher, however, when converted to knotted phyllites (as in the Correen Hills) or hornfelses (as at Knockandy and Tap o' Noth).

During the main deformation to which the area was subjected, the argillaceous beds, and to an even greater extent, the calcareous beds, behaved in a plastic manner, especially when sandwiched between more competent formations. Both these categories of rock may occur in lenticular highly crenulated masses at the apices of folds, having been squeezed completely out of the limbs of the folds where pressures were greater (e.g. Lion's Face, Braemar, and east of the mouth of the Boyne Burn). This tendency is particularly strong towards the west of the area, where some of the argillaceous rocks contain graphite; this makes them black in colour and even more incompetent than usual.

The *Epidiorites and Hornblende Schists* represent older basic igneous rocks or material which was originally partly igneous, partly sedimentary. Their response to weathering is very variable: sometimes they degenerate rapidly to incoherent rubble, especially when they contain large quantities of felspar; at other times they form strong massive sombre outcrops or even large hills (e.g. Morven). During deformation, many of these rocks remained tough and competent, even at high temperatures. Under extreme metamorphism associated with movement, slabs of hornblende schist were sometimes broken up to form tectonic xenoliths in migmatite complexes but, even under these circumstances, the rock seems to have remained tough and compact, with its mineralogy more or less unaffected.

The *Highland Border Series*, partly igneous and partly sedimentary, is divided into two portions: The 'Green Rocks' consist of sheared basic igneous rock, conspicuously green in colour, associated with rare black mudstones and red jasper; the 'Margie' portion of the series consists of grits and sandstones with shales and limestones. The age of the series, on the basis of rather fragmentary evidence, is considered to be Cambro-Ordovician. The *Downtonian*, nearly 3,000 feet thick, consists mainly of sandstones, with conglomerates, shales, and volcanic agglomerate; north of Stonehaven it can be seen to rest unconformably on the Highland Border Series, the plane of unconformity being more or less vertical. Both formations are restricted in occurrence: the Downtonian outcrops in the Stonehaven area; the Highland Border Series is confined to a narrow compressed belt on the downthrow side of the Highland Boundary Fault. The actual fault-plane of the latter may be filled with dolomite, or iron-stained chert, or serpentine.

The *Caledonian Orogeny* was a world-wide phase of compression and uplift which caused major geographical changes about the end of Silurian times; the mountains which evolved were called the 'Caledonides' since it is in Scotland that their extremely complex structures can best be studied. The whole of Britain was affected. As a result of the movements, large areas of former geosynclinal seas, such as Wales, were uplifted as mountain chains; the sea retreated as far south as Devon. In Scotland, the Highlands became a major mountain chain (the Caledonian Mountains) and the Southern Uplands were also uplifted; between these two areas a continental intermontane basin, corresponding to the Midland Valley of Scotland, was developed. The British Caledonian structures extend into Scandinavia, which became a mountain chain at the same time. In both areas, the movements were accompanied by large-scale intrusion of igneous rocks, mainly granites.

Basic Intrusive Igneous Rocks, dark or very dark in colour, are

mainly confined to the portion of the area north of the River Don. Many of them weather rapidly to incoherent rubble, so they frequently form low ground (e.g. the east-west valley through Insch). The heat associated with these intrusive bodies has sometimes been sufficient to convert the surrounding rocks into hard compact hornfelses (e.g. along the northern margin of the Insch mass). Sometimes a marginal xenolithic complex is developed in which the igneous rock has been contaminated by partial assimiliation of innumerable fragments of country rock (e.g. the southern margin of the Insch mass); in such cases, the minerals garnet and cordierite become abundant. Smaller outcrops of serpentine, most of them too small to show on the map, are more widespread. These may form quite prominent hills (e.g. the Coyles of Muick close to Ballater). Many of these smaller occurrences show signs of having been involved in strong movements, so they are considered older than the rocks of the larger masses. The latter are associated with the Caledonian Orogeny, but show comparatively few signs of tectonic disturbance; they are therefore distinctly younger than the main movements associated with the metamorphism of the surrounding rocks.

Granite occurs in large masses in the Cairngorms and around Lochnagar, Hill o' Fare, and Mount Keen; in smaller masses at Bennachie, Peterhead, Strichen, and Ben Rinnes. The rock, mainly pink but sometimes grey in colour, is more compact and resistant to weathering than the surrounding metamorphic rocks, so that it produces the highest ground in the area. Rectangular jointing, exploited by the weather, is responsible for the spectacular tors of Ben Avon, Bennachie, etc. Granite provides the material for one of the main industries of Aberdeen for, apart from its value as a building stone and as kerb stones, it is much used for monumental work; polished slabs of the rock are also used for facing buildings in industrial areas in order to cut down maintenance costs. The main granite masses are distinctly intrusive and are of the same general age as, or slightly younger than, the large basic intrusions. Not shown on the map are the so-called 'older' granites of the migmatite areas, consisting of innumerable minor intrusions, veins, stringers, and lenticles of granitic material. These are later than the main regional metamorphism and the movements associated with it, but movement was still considerable at the time of their formation; they are therefore distinctly older than the large masses of 'younger' granite which are shown on the map.

The *Lower Old Red Sandstone*, confined to the area south-east of the Highland Boundary Fault, consists of a spectacular series of conglomerates which pass upwards into sandstones; a thick group of volcanic rocks occurs about the middle of the succession. The

aggregate thickness is 18,000 feet, or just over three miles. The sediments, representing the erosional debris of the former Caledonian Mountains, were laid down as a gigantic piedmont alluvial fan. The fact that, in the conglomerates, even boulders up to several feet in diameter are well rounded is indicative of strong relief in the adjoining mountains and powerful transporting streams. The lavas, mainly basalts and andesites, often show signs of contemporaneous weathering and erosion, with the eroded fissures filled with later sediment; this suggests that deposition in any one locality was a very sporadic affair. Weathering of the rocks produces a distinctive red soil. The lavas are more resistant than the sediments and are responsible for most of the higher ground in the Lowland area; their main development is in the Sidlaw Hills.

The *Middle Old Red Sandstone*, confined to the area north of the River Dee, occurs only in small patches: outliers of the main mass which is developed in the Moray Firth area, Caithness, Orkney, and Shetland. The sediments were laid down unconformably on an irregular eroded surface of crystalline rocks, so that denudation of the Caledonian Mountains must have been well advanced before their deposition began. The main rock, coarse sandstone, is associated with conglomerates which are far less coarse than in the Lower Old Red Sandstone. These rocks are therefore intermediate in type between the very coarse Midland Valley succession and the much finer Middle Old Red Sandstone flagstones of Caithness. Compared with the surrounding rocks, the sandstone is soft and fairly easily eroded (hence, for example, the north-south valley through Rhynie), but it can also form fairly prominent hills (e.g. Hill of Fisherie and Windyheads Hill). In the higher areas of sandstone the streams form very deep gullies; the rock can also produce spectacular coastal scenery (e.g. east and west of Pennan). The Rhynie occurrence is notable for the famous Rhynie chert, in which the microscopic details of several primitive plants have been perfectly preserved.

To the south of the area, near Dundee, Upper Old Red Sandstone rests unconformably on Lower, with the Middle Old Red Sandstone missing. Immediately west of the area, near Elgin, Middle Old Red Sandstone is succeeded unconformably by Upper Old Red Sandstone, which is followed in turn by Permo-Triassic sandstones. The latter, of desert type, sometimes show wind rounded grains and facetted pebbles; they also contain reptilian footprints and remains.

The gap in the succession following the deposition of the Permo-Trias extends over practically the entire Mesozoic and Tertiary eras, for the next formation comprises only a few patches of gravel,

A snowy road through the Sitka spruce in the Forest of Deer

Gully erosion of the soft glacial drift soils in the woods of Ordiequish, Speymouth Forest

Putting pine logs through a small sawmill to obtain boxwood material

Drawing out thinnings from the larchwoods of The Bin Forest, near Huntly

possibly *Pliocene* in age, in the Buchan district of Aberdeenshire. In spite of their restricted development, these gravels are of great interest, for they occur at 350 to 400 feet above sea level and suggest a submergence of the land by this amount towards the end of Tertiary times.

STRUCTURE

The Highland Boundary Fault, running south-west from Stonehaven, divides the area into two distinct parts: a Highland area of predominantly crystalline rocks to the north-west, and a Lowland area of Palaeozoic sediments with associated lava flows. The fault-plane is steep and can sometimes be seen to be inclined towards the north-west (e.g. north of Stonehaven); sometimes a complex fault-zone develops (e.g. in the River North Esk and towards the south-west). The amount of down throw is not known, but it must be equal to or greater than the total thickness of the sediments on the down-throw side, i.e. 20,000 feet.

North-west of the Highland Boundary Fault, structures are extremely complex, even by orogenic standards, for the rocks have been subjected to more than one type of movement. The main grain of the rocks, parallel to the original axis of the mountain chain, is roughly N.E.–S.W., but cross-folding, especially in the east-west Deeside anticline, has produced major and minor flexures in the outcrops of the beds. Geological control of the topography is far from obvious and it has not been possible to trace a single horizon through the area. Granites are particularly well developed along the general line of the Deeside anticline. The main occurrences of basic rocks are roughly U-shaped in general plan and fringe the complex Boyndie syncline, whose axis runs N.N.E.–S.S.W.

South-east of the Highland Boundary Fault the main structure is the Howe o' the Mearns syncline. This syncline is asymmetrical, with its steep north-west limb wedged against the scarp of the fault. The gentle south-east limb shows the finest development of the lavas which, stretching south-eastwards from the general vicinity of Montrose, form the backbone of the Sidlaw Hills. The axis of the syncline runs N.E.–S.W. and pitches to the south-west. Thus, in the Lowland as well as in the Highland area, the general geological grain is N.E.–S.W.; at the axis of the fold, however, the strike swings through almost 180 degrees.

GLACIATION

Practically the entire area is covered with the debris of the *Pleistocene* Ice Age. Most of the debris is of local derivation, but occasional erratics have been transported considerable distances.

These include: laurvikite, laurdalite, and rhomb porphyry pebbles carried from the Oslo area of Norway and found near the north-east coast; occasional blocks of Jurassic clay, presumably dredged from the Moray Firth but carried miles inland (e.g. to Plaidy); fairly numerous Cretaceous flints, again most common near the north-east coast; garnetiferous rocks, transported from the Huntly area for many miles to the south-east; and fragments of Old Red Sandstone and lavas from the Lowland area which have been transported many miles northwards along the coast. On the basis of erratics and glacial striae, three main directions of ice movement have been deduced: the main movement, from the north-west, with Scandinavian ice occasionally impinging against the coast; a later movement, from the south, responsible for large quantities of red boulder clay near the coast; and a final phase of valley glaciation when glaciers flowed outwards from the higher ground, i.e. mainly from the west towards the east.

The main deposit is unsorted heterogeneous boulder clay with sub-angular boulders up to a foot or two, sometimes many feet, in diameter. Some boulders show signs of abrasion; soled boulders, flattened on one side and striated, are widespread though relatively infrequent. Outwash or fluvio-glacial deposits include shingle beds with imperfectly rounded pebbles, roughly sorted grits, and harsh, sometimes gritty, false-bedded sugary sands. When the latter occur in quantity, they are worked as a source of builder's sand and concrete aggregate; they are also used for covering seedbeds in forest nurseries.

During maximum glaciation the entire area was buried under ice. On a large scale, practically every topographical feature, including the highest hills, has been smoothed and rounded by ice abrasion; on a smaller scale, practically every rock outcrop has been similarly affected so that 'roches moutonnées' are the rule rather than the exception. After long exposure to the weather, glacial striae survive only on some quartz veins, where they can be demonstrated by rubbing with graphite; well preserved coarser striae are frequently found, however, when overburden is removed as a prelude to quarrying operations.

On the hills, corries are numerous and corrie lochans are fairly common. The valleys are comparatively straight, with truncated spurs; main valleys show the typical U-shaped cross-section and tributary valleys hang high above the main valleys. Local overdeepening of the valleys has sometimes occurred (e.g. Loch Muick), but major lochs are infrequent. On the lower ground, kettle holes, fragments of former river channels (especially common near the coast), river terraces, local river diversions, and innumerable

hummocky moraines and fluvio-glacial deposits record the waning phases of glaciation when the landscape was littered with 'dead ice' and indiscriminately dumped rock debris.

RECENT

After the melting of the ice, the land surface, formerly pressed down by a thick load of ice, recoiled slowly upwards. Although the process was far less marked than in more heavily glaciated areas (e.g. the portions of Scandinavia adjoining the Baltic Sea), the result is that the strand-line of late-glacial times can now be traced at about 100 feet above sea level. The existence of other raised beaches at about 50 feet and 25 feet above sea level, and of submerged remains of forests, peats, and old land surfaces down to 100 feet below sea level, suggests that recent fluctuations in the relative levels of sea and land may have been very complex indeed.

The rivers are still in process of establishing graded profiles, for their valleys were modified partly by glacial erosion and partly by the dumping of morainic debris. Their gradients range from roughly 1:300 to 1:1,000 (i.e. about ten times steeper than those of major mature rivers), so that the dominant erosive direction is downwards. Erosion takes place mainly by the abrasive action of the sand and shingle transported by the rivers, and swirling pot-hole erosion is still vigorous in steep rocky reaches (e.g. Linn of Dee and the gorge of the North Esk above and below Gannochy Bridge). In areas of former glacial over-deepening, however, the converse process, deposition, can be seen (e.g. silting up of the west end of Loch Lee).

The overall rate of river erosion is variable, but there seems to be a general tendency towards extension of the systems of the Spey and Tay at the expense of the remainder of the area. In Glen Tilt, the Tay is gaining ground at the expense of the Dee. The capture of the upper portion of the Geldie by the Feshie has increased the drainage area of the Spey at the expense of that of the Dee; the capture of the upper portion of the Don by the Avon, at Inchrory, represents another spectacular gain by the Spey. Within the area, the system of the Deveron seems to have grown at the expense of the Ythan. In general, therefore, the east-west rivers which cross the grain of the Highland rocks are eroding more slowly than the others.

The resistance to erosion of bed-rock varies considerably from point to point. Upstream from major obstacles, the rivers, committed to a temporary base level, have time to work laterally, thus broadening their valleys. The result is the typical pattern of open reach and close gorge (e.g. the River Don, which shows five open basins followed by gorges between Towie and Aberdeen). Areas of

hard rock define nodes where the rivers are effectively pinned down; areas of softer rock may show unstable reaches where lateral erosion can be a serious problem, especially if the material undergoing erosion is unconsolidated. Generally speaking, however, gradients are sufficiently steep and rock outcrops within the river bed are sufficiently close together to keep the courses of the rivers fairly stable.

Near the sea, fluctuating sea levels have produced an additional complication. As a result of early phases of uplift, the lower reaches of the rivers were eroded in bed-rock far below present-day sea level (e.g. the old valleys of the Dee and Don). Later phases of submergence filled these old valleys with unconsolidated alluvium. Following the uplift of the 100-foot beaches, the soft alluvial infilling of the valleys was rapidly eroded down to near present-day sea level, but patches of alluvium were sometimes left as a pair of terraces at a height of roughly 100 feet (e.g. the lower reaches of the River Dee). Since, however, most of the rivers are stabilised by bed-rock close to their mouths, rapid lateral erosion of unconsolidated deposits has not, as a rule, been extensive in their lower reaches.

The main exception seems to be the River Spey, which reaches the sea via a belt of comparatively soft Middle Old Red Sandstone. Its bed-rock valley, now filled with unconsolidated debris, is presumably very broad for, at the coast, the nearest outcrops are at Portgordon, three miles to the east, and Lossiemouth, seven miles to the west. Its lower reach is therefore more unstable than is normal, though artificial nodes are provided by the bridges near Fochabers and Garmouth. This instability is accentuated by a tendency to deposit alluvium during falling floods so that the river is braided and liable to changes of course. Surviving patches of boulder clay and alluvium adjoining the river have been gullied by minor streams and rainwash, sometimes with production of earth pillars (e.g. at Aultderg). At higher levels, gullying may extend downwards through fluvio-glacial sediments and boulder clay into the underlying Middle Old Red Sandstone (e.g. the spectacular section in the Burn of Fochabers).

A final complication may occur at the mouths of the rivers, where a deflection to the right or left can instigate a phase of extensive lateral erosion. If the mouth is not stabilised, either artificially or by bed-rock, the current, moving parallel to the coast, steepens the gradient of the sea floor so that the energy of the waves is no longer effectively dissipated. Rapid erosion then takes place on the landward side of the current and, on the seaward side, a spit builds up; thus the mouth of the river moves rapidly in the direction of the initial swing. The process continues till the river breaches the spit

or till it encounters an artificial obstacle or bed-rock (witness the mouth of the River Lossie, to the west of the area). This problem is acute in the case of the Don and Spey, for the mouths of both rivers would have to shift a considerable distance before they encountered bed-rock. The Don is stabilised at Balgownie, close to the sea, and its northerly swing is contrary to the direction of offshore drift, but its mouth could still move far to the north of its present position. The Spey is more unstable and its final swing to the west is in the direction of the drift. Left to its own devices it might stabilise between Binn Hill and Boar's Head Rock; the only reasonable certainty, however, is that, if its persistent tendency to shift westwards were left unchecked, its mouth would not move farther west than Lossiemouth.

Apart from boulder screes in the hills, and raised beach sands and shingle along the coast, *Recent* deposits are confined to low-lying areas. River alluvium, mainly deposited in the lower reaches of the rivers, is normally cultivated in spite of recurring floods. Poorly drained areas of peat, sometimes overlying diatomite (e.g. Dinnet), are individually small, but collectively they cover an enormous area. The peat is seldom worked on a large scale and these areas are normally allowed to look after themselves. There are, however, peat workings for horticultural purposes near New Pitsligo, for the whisky distilling industry (to produce peat smoke to 'kill' and flavour the malting grains) around Dufftown, and for household fuel on some outlying crofts; other peat bogs have been found suitable for afforestation. The coastal dunes are also largely untouched, though some of them are quite extensive (e.g. the Aberdeen-Forvie Sands, now a Nature Conservancy reserve, and the dunes near Rattray Head).

Pictish Symbols on the Maiden Stone

It's a dark hill-track over grey Culblean
  Though light on the rocks may glisten,
The lonesomest road that ever was seen
  But the old folks say—if you listen—

You may hear the tread and the march of the dead.
  (The young folks know the story),
Of the wild hill-men that came out of the glen,
  Fierce for battle and glory

Marion Angus

HISTORY AND ANTIQUITIES

BY DR. W. DOUGLAS SIMPSON

THE area covered by this Guide Book to the Forests of North East Scotland comprises the Counties of Angus, Kincardine or the

Mearns, Aberdeenshire and Banffshire. It thus forms what we may call the clenched fist of Scotland, thrust forward into the North Sea, and having its knuckles along the wild coastal promontory between Buchan Ness – the most easterly headland of Scotland – and Kinnaird Head, at the angle between the North Sea and the Moray Firth. This extensive tract of country, covering about 3,795 square miles, is defined on either flank by the Firth of Tay and by the valley of the Spey, and in rear by a portion of the central mountain backbone of Scotland, known anciently as Drumalban – the wind and water shear that runs north and south in a sinuous line from Ben Lomond to Ben Hope, sending the rivers of Scotland to the Atlantic and the North Sea respectively. Midway in its extent, the area is divided from east to west by another upland range, of great importance in olden times – the ridge known as the Mounth, stretching from the Drumochter Pass along the south side of Dee to the coast at Girdleness, near Aberdeen. Broadly speaking, the Mounth forms the boundary between Angus and the Mearns and Aberdeenshire. In Aberdeenshire are the rivers Dee and Don, usually regarded as sister streams, yet differing from each other as sisters mostly do though sharing in scenic charm and historic interest. North-eastward through Aberdeenshire and Banffshire flows the Deveron, a river which has perhaps failed to win its due share of public esteem; for it contains much lovely scenery and has its own claims to historical and antiquarian renown.

The northern portion of Angus, forming the apex to Strathmore and its continuation the Howe o' the Mearns, both based on the Old Red Sandstone, provide agricultural soil of high quality. There is also good land in the lower valleys of Dee and Don, and in the wide basin of the Urie, known as the Garioch – 'the meal girnel of Aberdeenshire'. But in general the land is of Highland character, well suited for sheep farming and afforestation; while the mountain masses are of gneiss or granite, mostly dedicated to grouse driving and deer stalking.

MESOLITHIC VESTIGES

Inevitably the nature of the land, as sketched in the foregoing paragraphs, has conditioned the human chronicle. The earliest traces of occupation by mankind take us back to Mesolithic times, and show us a glimpse of small groups of primitive food-gatherers, camping seasonally in open glades amid the primeval forests, and leaving behind them their hearths and their characteristic 'pigmy flints' – small geometrical slips or spalls of delicately worked flint, which are believed to have been hafted in wood or bone or horn, like teeth in a saw, so as to form tools for cutting edible grasses and

the like. Some famous sites of these Mesolithic camps have been found on either side of the Dee in the neighbourhood of Banchory.

Shell mounds and heaps of worked flints, found at various places among the coastal sand dunes, may also date back to Mesolithic times, though for these firm chronological evidence is so far lacking.

It may here be noted that the main source of flint in our area, throughout prehistoric times, appears to have been the knuckle of Buchan, where there is a large expanse of rolled flints, the heavy residue of a denuded Cretaceous deposit.

NEOLITHIC FARMERS

Such sparse communities of Mesolithic strand-loopers or food gatherers must have been few in number, and can have exercised no sort of control over their environment. Nor is it likely that they contributed significantly to the racial evolution of our area. Its first regular settlement dates from Neolithic times – probably not earlier than say, 2,500 B.C. Neolithic man was a farmer, who grew barley and bred cows and sheep. He had also mastered the arts of making pottery and of polishing his stone tools and weapons. Moreover, he had arrived at some notion of a future life, and buried his dead – or at least his important dead – ceremonially in large, carefully constructed chambered cairns, sometimes round but more usually long. In these the bodies were generally inhumed, though cremation was also practised. Such chambered cairns served as family vaults, in which the dead of several generations, doubtless belonging in each case to a ruling caste, were buried. There is evidence that Neolithic man entered Scotland by the Atlantic seaboard, penetrated to the North East along the Great Glen, and so reached our area from the north. His characteristic long cairns are scarce in the area under review; but there is one overlooking Macduff, one on the western outskirts of Aberdeen, a small group in Cromar, and one at Gourdon. Discoveries made elsewhere show that Neolithic man was of slender build, with oval face and long skull.

THE BEAKER COLONISATION

As in the case of their Mesolithic predecessors we can hardly believe that the first farmer colonists of Neolithic times can have been numerous enough to have bulked large in the make-up of the Scottish people. The first really intensive settlement of our area took place at the close of the Stone Age, probably about 2000–1800 B.C. About that time, the whole lowland region betwixt Tay and Spey was colonised, in large numbers, by a new race that came directly west, overseas from the delta of the Rhine, and made their landfalls at the

mouths of the Tay, Dee, Don, and Deveron. Particularly in Aberdeenshire the colonisation was dense, the fertile basin of the Garioch being thickly populated. In marked contrast to their Neolithic predecessors, these new settlers were sturdily made, with bullet heads and square jaws. They inhumed their dead for the most part singly, in a crouched position in short stone cists, usually not more than 3 feet 8 inches in length. Alongside the skeleton is found a characteristic grave-pot, known from its shape as a beaker. Tools and weapons of flint or stone are also found, and occasionally such specialities as archer's wrist guards and handsome jet or amber necklaces. The jet doubtless came from Whitby, and the amber was probably washed ashore, being derived ultimately from the Baltic. A funeral rite of unknown significance is indicated by a handful of charcoal often found in short cist graves.

Very large numbers of these short cist or beaker burials have been found all over the lower grounds of our area, and ample displays of their contents are available in its chief museums, notably in the Anthropological Museum at Marischal College, Aberdeen. It is clear that we must regard the 'Beaker Folk' as the basic strain in the existing population. Indeed, anthropological investigation, carried out over a long period in the University of Aberdeen, has shown that the physical characters of short cist man are still recognisable in the rural population of the North East.

THE AGE OF BRONZE

After the Beaker Folk had been settled in our area probably for a few generations, two changes of cardinal importance occurred in their economy. In the first place came the use of bronze. Bronze articles are sometimes, though very rarely, found in short cist burials: for example, a bronze knife-dagger was obtained from a cist at Lintrathen in Angus, and a trace of bronze in a cist at Idvies in the same county.

The second change was the introduction of cremation, which became general in the High Bronze Age. The ashes of the dead were gathered into a large vessel, shaped like a plant-pot, known as a cinerary urn. Very often the urn was inverted over the deposit. Large numbers of such urns have been reported from our area, and they are well represented in its museums. Nevertheless, the total preserved is considerably less than that of the beakers; yet it would be wrong to regard this as evidence of a decline in the population, for the cinerary urns, being often found loose in the soil, sometimes in groups or 'urn fields', and lacking the protection of a stone cist, are apt to be destroyed at the moment of discovery.

The characteristic sepulchral memorials of the High Bronze Age

are the round cairns and the stone circles. No monuments are more typical of the skyline of our north-eastern hills and braes than the great round cairns which must surely mark the resting-places of Bronze Age chiefs, and usually yield the cinerary urns of that period. On the lower grounds, smaller cairns occur in groups, doubtless burial-places of humbler folk, and often are associated with hut circles, stock pounds, cultivation terraces, and other signs of human occupation. Even more characteristic of the period are the

Druid Circle with Recumbent Stone

circles of standing stones, popularly known as 'Druid Circles'. They usually yield cinerary urns of the Bronze Age, though some at least of their sites are known to have been occupied by the Beaker Folk, while others again appear to have been in use until the beginning of the Christian era. A type of stone circle, practically restricted to the region between the Mounth and the Spey, is marked by the presence, almost always on the south-west sector, of a massive recumbent stone set between two 'flankers'.

THE CELTIC IRON AGE

It is believed that the use of iron was introduced into Scotland a century or two before the Christian Era. By this time the population, or at least its upper strata, contained a substantial Celtic element, superimposed upon the older Bronze Age folk. To the prehistoric Iron Age belong two classes of monuments specially well represented in our area. The first of these is the earth-houses - those strange subterranean galleries of dry-built stone, found in great abundance

in certain districts, such as the Howe of Angus, or the Kildrummy basin on Donside. These *souterrains* are always found in connexion with the remains of huts above ground. They were not hide-outs, since the hut would have betrayed them. There is much evidence that they were lived in, probably during bad weather and winter. Our earth-houses have yielded many relics, notably handsome enamelled bronze armlets of a type peculiar to Scotland. Roman pottery and coins are occasionally found in them.

The second class of Iron Age monument is the great hill fort of stone or earthwork which provides some of the most imposing prehistoric constructions in our area. We may mention the earthwork forts of the Brown Caterthun, near Brechin, and Barra Hill near Inverurie: and such impressive stone forts as the White Caterthun, the Barmekin of Echt, and the formidable system of ramparts that girdles the Mither Tap of Bennachie. Sometimes these stone walls were laced with bonding timber in the Gaulish manner: and when this woodwork caught fire, by combustion (accidental or deliberate) of the wattled huts within, the result is a vitrified wall. Our area has three first class examples of vitrified forts – Finavon in Angus, Dunnideer and Tap o' Noth in Aberdeenshire. If it be true (as has been computed) that something like 100,000 cubic feet of timber were felled to provide for the ramparts at Finavon, then Strathmore must have been well wooded about the beginning of the Christian era.

Our area contains several crannogs, or lake-dwellings – the two most notable being that in Loch Kinnord near Dinnet, and another in the now drained Loch of Leys, near Banchory. There is evidence that such buildings were used, and indeed constructed, in the Scottish Highlands as late as the sixteenth century.

THE ROMAN INVASIONS

The Roman invasions of our area, which began under Julius Agricola in A.D. 80, have left their mark in a series of great marching camps extending northwards through Strathmore, the Howe o' the Mearns, and eastern Aberdeenshire as far as Auchinbane near Keith, the northmost Roman camp at present known in the world – though there is what seems to be a small Roman post at Bellie near Fochabers. It is clear that the marching camps in Strathmore belong to more than one expedition; but nothing is meantime known as to their absolute dates.

THE EARLY CHRISTIAN PERIOD

Where Rome had failed with the sword she returned to conquer by the Cross. After the final withdrawal of the Roman garrisons our

area emerges as a portion of the kingdom of the Picts. Under the stimulus of Christianity there was developed in eastern Pictland a monumental art of a brilliancy unsurpassed in Dark Age Europe. The oldest of these stones are incised with the weird, unexplained figures usually referred to as 'Pictish symbols'. Often such monuments may be seen in churchyards known to date from Celtic times; often again they are found in lonely spots, where once may have been a little wattled chapel or a preaching station. Later, the Pictish symbols are associated with a Christian cross, and with elaborate figure sculpture, marked by the utmost verve and grace, all the carving being now in high relief and richly decorated with Celtic ornament. The subjects of the figure sculpture can often be identified as Scriptural, or derived from Christian iconography. Reference may be made to the splendid collection of these monuments at Meigle in Perthshire, just beyond the border of Angus, and to the important groups at St. Vigeans near Arbroath and Aberlemno between Forfar and Brechin. The brilliance of this early Christian monumental art in Angus was doubtless aided by the presence of good workable freestone.

The most conspicuous monument of the Celtic Church in our area is the Round Tower of Irish character, dating from about 1000, which adjoins Brechin Cathedral.

The history of these early ages in our region is mainly a tale of drum and trumpet: but mention should be made of the Pictish victory at Nechtansmere (Dunnichen in Angus), in 685, which saved the Eastern Lowlands from being absorbed in Anglian Northumberland, and thus played its part in the evolution of the Scottish nation. At Lumphanan, on Deeside, Macbeth was slain in 1057:

> Owre the Mounth thai chast him then
> Rycht to the wod of Lumfanan.

It is not to be expected that the Norse Vikings, in their raids upon Scotland in the ninth and tenth centuries, left our north-eastern knuckle unscathed: though the main line of their plundering expeditions appears rather to have lain down the west coast, where they found the familiar fjord and mountain scenery of their homeland. Yet Viking graves and finds of the Viking period are almost non-existent in our area, and in Aberdeenshire one leading authority admits only a single Scandinavian place-name, namely a dedication to St. Olaf in Cruden. On the other hand we have a record of an unsuccessful Norse attack upon Buchan in the mid-tenth century, and the *Breida Fjord*, now the Moray Firth, bulks large in the *Orkney – inga Saga*. Also we have a picturesque account of the doings of a noted 'champion and berserk', Tryggvi Ulfkelsson, who

'belonged to a family in Buchan side in Scotland'. It has been thought that certain vigorous forms of speech found in the Angus and Buchan dialects came in through direct contacts with Scandinavia; and there are vivid old traditions of Norse or Danish landings and conflicts with the native Celts in the former county.

MEDIEVAL TIMES

What is usually termed the Celtic period in Scottish history drew to an end in the eleventh and twelfth centuries, with the advent of the vigorous and far-sighted Canmore dynasty and the introduction, under its auspices, of Anglo-Norman feudalism, royal and baronial burghs, and the full organised Roman hierarchy with its cathedrals, parish churches and monasteries. The cathedrals of Brechin and Aberdeen and the great Abbey of Arbroath perhaps hardly come under the purview of a rural department like the Forestry Commission: but mention may be made of the Augustinian Priory of Restenneth, near Forfar, with its very early Romanesque tower, and the Cistercian Abbey of Deer in Buchan, the only place in our area where a complete monastic plan can be studied. Fine medieval parish churches survive, still in use, at St. Vigeans in Angus, Arbuthnot in the Mearns, Monymusk in Aberdeenshire, and Cullen in Banffshire: and, as ruins, at Kincardine o' Neil and Auchindoir, both in Aberdeenshire. Kincardine o' Neil Church appears to be an example, unique in Scotland, of a parish church having a hospital attached to its eastern end. A feature peculiar to the North East is the group of late medieval sacrament houses, of which beautiful examples may be seen at Kintore, Kinkell, and Auchinoir, all in Aberdeenshire, and at Deskford in Banffshire.

At first carried out by peaceful means, the Anglo-Norman penetration was continued by force of arms under Edward I. The result was the long and desperate struggle for independence. Into this bitter conflict our area was fully drawn. It was at Stracathro in Mearns that John Balliol formally handed back the Crown to his English overlord. Two turning points in the contest were the battles of Inverurie (1307) and Culblean (1325), and a notable part was played by the great castles of Brechin, Dunnottar and Kildrummy. From Arbroath Abbey, on 5th April 1320, the memorable Declaration of Scottish Independence was sent to Pope John XXII. The successful outcome of the war led to the emergence of new families and new rivalries – Lindsays and Ogilvies in Angus, Gordons and Forbeses in Aberdeenshire. The resultant period of feudal anarchy was marked by the memorable battles of Harlaw (1411) in Aberdeenshire and Glasclune (1392) and Arbroath (1446) in Angus. For the 'Red Harlaw', the bloodiest battle recorded to have been

fought in our area, it is said that 'the coronach was cried from the Tay to the Buck of the Cabrach.'

North of the Mounth the conflict between Gordons and Forbeses was sharpened by the collapse of the ancient Earldom of Mar, and by the fact that in the Reformation struggle the Forbeses in general took the Protestant side, while the Gordons mostly adhered to the ancient faith. In the next century the same alignment repeated itself, the Gordons supporting the Crown while the Forbeses espoused the Covenant. In the wars thus engendered our area was heavily involved. Outstanding events were the battles of Corrichie (1562), Glenlivet (1594), and Alford (1645), and the epic defence of Dunnottar Castle in 1651–52, when the Crown jewels of Scotland were smuggled out from the beleaguered stronghold and hidden in Kinneff Church until the Restoration.

From the seventeenth century the North East was strongly inclined towards Episcopacy, and therefore to Jacobitism. The 'Fifteen' was launched at Castleton of Braemar; the Old Pretender landed at Peterhead and was proclaimed at Fetteresso Castle, near Stonehaven; while in the 'Forty-five' one of the smartest defeats inflicted on the Hanoverian forces took place at Inverurie. Not until the latter half of the eighteenth century can it be said that really settled conditions began to prevail between the Tay and the Moray Firth. Afforestation of the area may be held to have begun in earnest with the far-reaching schemes of Sir Francis Grant (Lord Cullen) at Monymusk after 1716; the second baronet, Sir Archibald, is said to have planted forty-eight million trees. He also abolished the old medieval system of 'run-rig' farming, and introduced the turnip into the neighbourhood.

The final settlement of the Highlands after the 'Forty-five' was marked in our area by the building (1749–54) of the great military road from Blairgowrie to Fort George, near Inverness, and the reconstruction as garrison posts of the two ancient castles of Braemar and Corgarff, at the head respectively of the Dee and Don valleys. Incidentally, the making of this road gave us the most romantically beautiful of all the old bridges in our area – Invercauld Bridge over the Dee near Balmoral, erected in 1753.

THE CASTLES

Among all the ancient monuments of various periods with which our area is crowded pre-eminence must beyond doubt be assigned to the castles. Scotland is a land full of castles – due mainly to the fact that here the vast ancient Celtic earldoms tended from an early period to subdivide or to break up, so that there arose a numerous class of smaller barons or lairds, each of whom required his castle.

Moreover, owing to the prolonged disorder of the country, castles, in the strict sense of the fortified residence of a feudal landowner, continued to be built until as late as the seventeenth century. Thus the history of castellar construction is longer in Scotland than in most other parts of Europe. And so here, if anywhere, we may say with truth that:

> Donjons and towers and castles grey
> Stand guardian by the winding way.

The earliest castles, introduced during the Anglo-Norman penetration in the thirteenth century, were moated mounds with wooden superstructures. Of these, our area has some impressive examples, such as the Bass of Inverurie, the Doune of Invernochty, and the Peel of Lumphanan, all in Aberdeenshire. In due course these timbered earthworks were replaced by great stone castles having high and thick curtain walls enclosing a courtyard. An impressive example, associated with much later building, is the ancient fortalice of the Comyns at Balvenie, near Dufftown, Banffshire. But the grandest of these thirteenth-century castles of *enceinte* in our area is the great royal castle of Kildrummy on Donside, afterwards the chief seat of the Earldom of Mar. With its mighty ring of walls and round towers, and its beautiful chapel, all built for the most part of fine sandstone ashlar, and set in a superb Highland setting, it is indeed a splendid specimen of medieval castellated architecture. And on the pages of Scottish history its record is writ large, in letters of blood and fire.

With the decay of the Earldom of Mar power passed in Aberdeenshire to the Gordons. So their chief castle of Strathbogie, afterwards known as Huntly, grew into one of the most imposing of Scottish baronial edifices. As finally reconstructed about 1600, largely upon the model of Blois, Huntly Castle is undoubtedly the choicest example of Rennaissance architecture in our area. Few castles in Britain exhibit in greater amplitude and gorgeousness the possibilities of heraldy as a decorative enrichment.

Meanwhile on the sunward side of the Mounth great families were rising into power, and building themselves sumptuous castles. On the mighty sea-girt crag of Dunnottar, the eyrie of the Earls Marischal had become, in the early seventeenth century, one of the most extensive of Scottish castles, and in virtue of its situation one of the grandest – though in themselves the buildings are far from imposing. Farther south, in Strathmore, a rich land blessed with good building stone, we find two of the most spectacular of Scottish castles – one a bare ruin, the other a stately home, which an English tourist of 1723 could describe as 'one of the finest old built palaces in

Scotland, and by far the largest, that when seen at a distance the piles of turrets and lofty buildings, spires, and towers, made it look like a town'. This is no inapt description of Glamis Castle, the seat of the Earl of Strathmore, the ancestral home of the Queen Mother, and the birthplace of Princess Margaret. By contrast, Edzell Castle, the stronghold of that gifted, gallant, gay, turbulent and tragic race, the Lindsays of Glenesk, must be accounted the grandest baronial ruin in Angus, and claims pre-eminence by reason of its unique pleasance, the walls of which are enriched with heraldic decoration and with sculptured portrayals of the Cardinal Virtues, the Liberal Arts, and the Planetary Deities. These sculptures have been shown to be of German origin.

Alongside such great castles we have the tower-houses of the smaller lairds. Sometimes still inhabited, more often in a state of gaunt ruin, these are so numerous in our area as almost to rank as a *motif* in the landscape. At one extreme we have the tall roofless tower of Invermark, situated amid the wild scenery at the head of Glenesk in Angus – the *beau ideal* of a Highland stronghold; or the high-perched Auchindoun in Glenfiddich, Banffshire, looking for all the world like a *Raubritter's* castle on the Rhine. At the other extreme we have the stately castle of Crathes, in the gentle scenery of lower Deeside, famous for its painted ceilings and for the glory of its ancient garden.

Crathes, with its sister castle, Muchalls, though both in the Mearns, belong to a noble group of Aberdeenshire baronial mansions, dating from about 1600, which are associated with a local family of master-masons, the Bells. Included in this group are Craigievar, Castle Fraser, Fyvie, and Midmar – buildings of which any nation might well be proud.

Of these the oldest, one of the most charming, yet perhaps the least known, is the lovely Castle of Midmar, tucked away in a sequestered nook on the north side of the Hill o' Fare. It belongs to a type of castle almost peculiar to Scotland in the sixteenth century – though there are a few examples in Baltic lands. From its outline, it is known as the 'Z-plan': to a central block a flanking tower is appended at each of two diagonally opposite corners – in military parlance, *en echelon*. Each tower with its gunloops covers two sides of the main block, while the main block in turn covers the towers, so that you cannot approach the castle from any quarter without coming under fire. The characteristic Scotch economy of thus making two towers do the work of four will be appreciated; and perhaps it is no chance that this ingenious design appears to have originated in Aberdeenshire! Apart from the interest of its plan, Midmar Castle – still intact, though at present uninhabited – is a thing of sheer

Ballindalloch Castle, with Scootmore Forest beyond

Research plots at Teindland Forest, near Elgin. The solitary stunted Scots pine, 100 years old, contrasts with 8-year-old larch and 30-year-old Lodgepole pines, thriving after ploughing and fertilising the heath

Teindland Woodland Nursery, where millions of tiny seedlings are raised for the first year of their life

beauty; and its charm is enhanced by its delightful seventeenth century garden, with 'bee boles' in the enclosing wall.

Another noble castellated building is Cullen House, Banffshire,

A forest nursery beside Midmar Castle

the residence of the Countess of Seafield. Its predecessor, a Norman mound, is still extant in the spacious and lovely grounds: and hard by it is the fine old parish church, dating from 1536, and containing one of the characteristic north-eastern sacrament houses of which mention has already been made, as well as the fine altar tomb of

Alexander Ogilvy of Finlater. The oldest part of Cullen House appears to date from 1543, and there are large extensions made about 1711 and again in 1858; so that the house now, as an Irishman put it, 'consists mainly of additions'. The general effect is now that of a fine castellated edifice in the ornate version of the Scottish baronial style which was popularised in the middle of last century by the distinguished architect, David Bryce.

Among the great houses of more modern origin, space can be found here to mention only two. One is Haddo House, in Aberdeenshire, the ancestral seat of the Marquis of Aberdeen. The central and oldest part, dating from 1732, and the work of William Adam, is a noble essay in his favourite Palladian style: later additions are in keeping, and in the eighties of last century a fine chapel was added, designed by Street. So now the whole vast pile, standing in spacious finely timbered parklands, has all the aspect of a great English country house, and, as such, is unique in North Eastern Scotland.

The other great modern country house that must not be omitted is royal Balmoral. This was erected by the Prince Consort between 1853 and 1856. Extravagantly praised in its early days, the castle suffered from the unthinking depreciation of everything Victorian that has been fashionable in recent times. It is, in fact, a deeply interesting pioneer essay in Scottish baronial architecture as the mid-nineteenth century conceived it, and is marked all through by good planning, admirable proportions, and (above all) sound craftsmanship. Balmoral Castle is emphatically one of those buildings to which no photograph does justice. The more it is seen and studied, the greater becomes our recognition of the fact that it is undoubtedly one of the most considerable achievements of Scottish architecture in the nineteenth century.

Of the humbler homes in our area it is sufficient here to say that many of the farm-houses and steadings, particularly in Angus, have their own modest dignity and charm. Often harled and whitewashed, and marked by well considered fenestration, the farm-house and its offices form a compact and homely group, in many cases shaded by fine old trees. In their origin, such farms date back to the great agricultural advance that followed upon the extinction of the last Jacobite rising.

Few of the older 'long houses' – in which byre and dwelling-house were united in one long isolated building, while the roof timbers common to both were occupied by the poultry – appear to survive in our area.

For the perfect picture of an ancient Highland castle, where a noble river, spacious and finely wooded grounds, and a background of forest rising into a crest of wine-dark hills, all combine to set forth

a coronet of turrets, steep roofs with crow-stepped gables, and picturesque dormer windows – the whole resulting in an *ensemble* such as only Scotland can provide – we may perhaps turn, among all the baronial mansions in our area, to Ballindalloch Castle in Strathspey, in the angle where the Avon meets the Spey, a dozen miles south-west of Craigellachie.

A Long-house in Glen Clova

When the rugged moor's my comrade
  And the barren hills my friends
When I take delight in the winds of night
  And ghostly twilight ends

The ancient folk are waking
  They beat on my heart and brain
From a handful of dust comes wanderer's lust
  For traffic with wind and rain

Marion Angus

LANDSCAPE AND LITERATURE

BY H. L. EDLIN

THE traveller among the forests of North East Scotland is soon impressed by the wildness of their countryside. Tree-growing is an enterprise that always concerns itself, for economic reasons, with poor land, but here forestry is found mostly upon bleak exposed bluffs and hilltops, or on the few patches of moss and muir, sand or shingle, down on the flats. Generations of farmers have pushed the level of cultivation far up into the hills, and have reclaimed all land that was reclaimable – and perhaps some ground that was not truly so, as the frequent ruins of abandoned crofts still show. To understand the place of forestry in the modern economy we must look

back upon the history of the landscape, and see how it may be reflected in the region's literature.

Though it lies remotely from our woodlands, the central feature that dominates the North East is the high Cairngorm range, Scotland's largest mountain mass exceeding 4,000 feet. Ben Macdhui, which at 4,296 feet is the second highest peak in Britain, stands actually on the borders of Banffshire and Aberdeenshire, and from its summit the modern rambler can look down on three of the rivers of the North East – Spey, Avon and Dee. But to the first settlers on the eastern side, these mountains were places of fear and mystery; even today no road runs west between the Spey that forms our northern boundary and the Tay on the south. From this central massif lesser but still substantial ranges radiate, like the fingers of some gigantic hand, north, east, and south towards the sea, carrying with them both their poor soils and harsh climate. The Bin of Cullen is over a thousand feet high though only two miles from the sea; beside Stonehaven you may find bleak muirs only three miles inland, and even to the south, beyond Strathmore, the Sidlaws repeat true mountain conditions close to the cold North Sea.

The great Caledonian Forest of birch and pine once overspread most of the land, and there is hardly a moss that does not, even today, hold stout stumps preserved within its peat. But over the centuries grazing, muirburn fires, and clearances for cultivation or to harvest timber and firewood have swept most of it away. Only along the upper Dee and its tributary valleys do native pinewoods survive in their splendour. The wild rock-bound coastline of the North East had an indirect influence on the woods inland, for beside its havens and estuaries there sprang up, quite early on, fishing villages and trading towns. These drew upon the woods for timber for their vessels, and for export. Ships were framed – as many still are today – with local oak, while pine logs were floated down the Spey to Garmouth and down the Dee to Aberdeen. Oakwoods were also felled for their bark, which long served as the only medium for tanning leather, when every small town had its tannery. Pine woods provided cabers or roof-trees, while pine splits made a common form of candle, for dry resinous pinewood burns freely with a bright flame. Pine found its place in joinery also; for example, the decorative panelling in the sixteenth-century Provost Skene's house in Aberdeen has been sawn from native pine logs. From the birchwoods came the common household woodware – platters and spoons, buckets and coggies made by the wood-turner. For centuries nobody gave heed to the preservation of the woods that yielded such essential materials, and as the trees slowly vanished the hills were left naked to the winds.

Otherwise, the story of land use in the North East shows how the people have striven to come to terms with their hard surroundings. The wealth of prehistoric remains and medieval castles, and the frequent small towns, record close settlement near the coast and in the few fertile howes inland. But until the early nineteenth century the hills and muirs were rough and unbroken – the scene of poor crofting steadings that have now mostly vanished: there were shielings or temporary settlements for summer grazing far up above the glens, where remnants of old forests of pine, birch, and oak still gave some shelter to flocks and herds.

The improving lairds gradually altered the whole situation. They concentrated the people in new villages or towns laid out on a characteristic rectangular plan, and grouped the old common lands into substantial farms; once the workable land in the straths had been broken by the plough, good rents resulted. Some of this income was expended on building new mansion houses or extending older castles, but much was invested in growing timber. Around each great house there sprang up fine woods of Scots pine, European larch, Norway spruce, oak, beech, and sycamore. A tradition of forestry skill developed, and these home woods and policies have continued to form a fruitful source of timber and hence of income, as well as being valued for amenity, shelter, and sport.

So arose the North East landscape that we know today – a relatively modern creation. Each strath or hollow holds its succession of well-planned farms, where crops of oats, barley, and turnips are raised with unequalled skill, and herds of prime black Aberdeen-Angus beef cattle graze contentedly. At intervals the traveller encounters one of the small neatly planned townships with well-built stone houses, but no really old ones; and here and there a castle or mansion rises amid its sheltering trees.

Only in the Dee Valley is the landscape tempered with any consideration other than that of gaining a livelihood from the land; there the tourist trade, based on salmon, grouse, deer, and the quieter attractions of mountain and riverside, has given rise to attractive townships well supplied with hotels.

Modern forestry concerns itself with the lands that the improvers rejected, or with those that defeated them. The ridges and rounded hills between the straths, the bogs once worked for peat fuel, and the occasional sandy muir, are as great a challenge to the modern tree planter as were the difficult neglected lowlands to the farmers of the last century. The reasons that prompt the Forestry Commission's onslaught upon heather muirs and boulder-strewn hillsides are economic – here is land that must somehow be made to yield the timber that industry needs, and at a profit. Yet gradually

the new plantings are restoring to the North East a welcome element of woodland scenery that had vanished before the flocks and herds of many generations of crofters. In many places the skyline is already enlivened by the bold pyramids of pine and spruce, while larches spread their tapestry of green, fawn or russet across the lower braes. Amid these rolling uplands the view of fields rising to fir woods looks exactly right. The forester is restoring a fitting element to the northern scene.

At many points in the North East small crofting communities cling precariously to the old way of life. Their holdings may not be crofts in the strict legal sense but yet are so small that no amount of hard toil can make them yield, under modern conditions, reasonable support for an able-bodied man and his family. Forestry, needing only the poorer land, provides the ideal supplementary activity, for tree planting and timber felling provide well-paid work within reach of the homestead; conversely, the forest gains from having a good labour force composed of sturdy men already accustomed to hard work in the open air of the bracing north, and to the skills of spade and axe.

The place names of the region show a fascinating mixture of Gaelic and Teutonic origins. Broadly speaking, natural features like hills and rivers retain their Gaelic names, though that language is no longer spoken. Farmsteads and hamlets may carry either Gaelic or Scots names, the proportion of the latter increasing towards the coasts.

Vigorous Scots dialects – one peculiar to Buchan and another to Angus, but both owing much to Norse influence along the coast and little to English, form the medium for local speech and verse. Though no great writer has emerged, there are close connections with the main stream of Scottish literature. The forebears of Robert Burns once farmed Bogjurgan on Glenbervie Braes in Kincardineshire, while Sir Walter Scott chose the fisher port of Arbroath as the scene for *The Antiquary*. Sir James Barrie, a native of Kirriemuir, made the mythical town of Thrums the setting for accounts of domestic life and gossip that delighted our Victorian grandparents but are now out of fashion – despite their acute insight into human nature and the deftness of their Scots dialogue. In reaction to such douce 'kailyard' novels and stories, Lewis Grassic Gibbon produced, in more recent times, realistic stories of the Angus country that have earned widespread recognition.

The North East region of Scotland is the true home of the 'bothy ballad' for which both words and music were composed by anonymous farm servants during their long winter evenings. The young unmarried men commonly lived in quarters called a bothy, set above the stables on each of the larger farms; as they frequently moved on

when a term of service was ended, the ballads gained a wide circulation and have become part of our national literature. They are also known as 'corn-kisters', because their rhythm was maintained by sitting on corn chests and banging heels against the wood.

The Delgaty Estate, near Turriff, on which stands the modern Delgaty Forest, is the scene of the best known of all such ballads, *The Barnyards o' Delgaty*, which opens:

As I cam in by Netherdale
  At Turra market for tae fee
I fell in wi a farmer chiel
  Frae the Barnyards o Delgaty.

He promised me the ae best pair
  I ever set my eyen upon;
But when I gaed hame tae the Barnyards
There was naething there but skin and bone.

The auld black horse sat on his rump
  The auld white mare lay on her wame
And aa that I could 'hup' and crack
  They wouldna rise at yokin time.

The *Barnyards o' Drumdelgie*, an equally famous ballad, stems from Drumdelgie Farm, close to The Bin Forest at Huntly. All of these ballads have catchy tunes, of the kind that trips easily off an accordion or even a mouth organ. Some give an insight into the labourers' life in the days when horse-power meant real live horses. A common note is the meanness of the masters, but the themes are varied, while every song has several versions of its words, some more printable than others.

The countryside around the Forest of Deer, in Buchan, is the scene of a touching but cheerful song of love lost but heart unbroken; it is called *Mormond Braes*, and begins:

As I gaed doun by Strichen toun
  I heard a fair maid mourning,
And she was making sair complaint
  For her true love neer returning.

It's Mormond Braes where heather grows,
  Where aft-times I've been cheery,
O Mormond Braes where heather grows,
  It's there I lost my dearie.

Sae fare ye well ye Mormond Braes
  Where aft-times I've been cheery
Fare ye weel, ye Mormond Braes
  For it's there I lost my dearie.

O, I'll put on my goun o' green,
It's a forsaken token
And that will let the young men ken
That the bands o' love are broken.

There's mony a horse has shappert and faaen
And risen and gaen fu rarely,
There's mony a lass has lost her lad
And gotten another right early.

These are but samples from a remarkably rich field of native song, for Gavin Grieg, a local schoolmaster, has collected no less than ninety volumes of Buchan verses, which are now lodged in the King's College Library at Aberdeen.

Violet Jacob deservedly ranks as a significant modern Scots poet, as well as a regional writer who has expressed the feel of her native Angus with uncanny accuracy. As John Buchan said, hers is a living speech, with the accent of a natural voice, and she wrote in Scots because what she had to say could not be written otherwise and retain its peculiar quality. That is the true test of poetry in any language. Nearly every song holds the sound of the east wind blowing in from the chill North Sea, but her moods are varied. There is a sense of longing for accustomed scenes, as in *The Gean Trees*:

I mind, when I dream at nicht,
Whaur the bonnie Sidlaws stand
Wi' their feet on the dark'nin' land
And their heids i' the licht;
And the thochts o' youth roll back
Like wreaths frae the hillside track
In the Vale of Strathmore;
And the autumn leaves are turnin'
And the flame o' the gean-trees burnin'
Roond the white hoose door . . .

There is dread of the supernatural, as in the dialogue between father and bairn in *The Northern Lichts*:

'*The lift is fu o' wings o' licht*
Risin an deein doon –'
'Rax ye yer airm and haud it ticht
Aboot yer little loon.
For oh! the North's an eerie land
And eerie voices blaw
Frae whaur the ghaists o deid men stand
Wi their feet amangst the snaw.'

In contrast we have the homespun humour of *The Tod*:

> There's a tod aye blinkin when the nicht comes doon,
> Blinkin wi his lang een an keekin roond an roon,
> Creepin by the fairmyard when gloamin is to fa
> And syne there'll be a chicken or a deuk awa
> Aye, when the guidwife rises, there's a deuk awa.

So the guidwife calls on a lad, who keeps hanging around the steading, to kill the fox, but with even worse results, although he succeeds:

> Cries she – 'This time it is the lass.
> an *she's* awa!
> Aye, yon laddie's waur nor
> ony tod, for Bell's awa!'

Best known perhaps is her wonderful lyric *Tam i the Kirk*, which opens:

> O Jean, my Jean, when the bell ca's the congregation
> Owre valley an hill wi the ding frae its iron mou;
> When a' body's thochts is set on his ain salvation,
> Mine's set on you.

Marion Angus, writing mainly in English though occasionally employing a vigorous Scots rhyme, gives a contemporary and complementary impression of the countryside of the Dee. This guide's chapter headings provide a fair gleaning from her poems, and reflect her feelings for the uncanny character of the great Grampian hills and the unexpected loveliness of their glens and streamside woods.

Donside in turn has produced a modern writer who catches the feel of a landscape and its hold on an exile. This is Charles Murray, author of the collection of poems entitled *Hamewith* – meaning 'homewards', which includes that famous poem called *The Whistle*:

> He cut a sappy sucker from the muckle rodden tree,
> He trimmed it an he wet it, an he thumped it on his knee;
> He never heard the teuchat when the harrow broke her eggs
> He missed the craggit heron nabbin puddocks in the seggs
> He forgot to hound the collie at the cattle when they
> strayed,
> But you should hae seen the whistle that the wee herd made!

From his later collection entitled *In the Country Places*, come these two extracts, one showing affection for a place and the other the

still deeper and truer feeling for a loved one. First, from *Bennachie*:

There's Tap o' Noth, The Buck, Ben Newe,
Lonach, Ben Rinnes, Lochnagar,
Mount Keen and mony a Carn I trow
That's smoored in mist ayont Braemar.
Bauld Ben Muich Dhui towers until
Ben Nevis looms the laird o' a'
But Bennachie! Faith, yon's the hill
Rugs at the hairt when ye're awa.

Then, from *The Hills and Her*:

A bower o' birks – O! happy dream
A wee hoose happit ower wi' breem
A window to the Wast, a neuk
Weel-cushioned by the fire, a beuk
O' sangs – the sangs I canna sing
For aye as throu' my hairt they ring
I lift my heid, an' lose the line
To meet the een that's waitin mine.

A fine modern survey of the region and its recent history is found in John R. Allan's *North East Lowlands of Scotland*, published by Robert Hale in 1952. Far more than a superficial guide book, it describes a whole way of life, and is written by a sensitive author who feels himself a part of it, and is ready to contribute his own philosophy to aid our understanding of it. Describing the woodlands in his chapter on 'The Making of the North', John Allan says:

'I doubt if the mansion houses did the countryside much good, but generations have blessed the woods that were planted round them. Archibald Grant (of Monymusk) was the leader in this as in so much else. He planted by the million and lesser men followed with their thousands. If you stand on the top of a hill and look across the country you can pick out the lairds' houses by the woods, now old, but not less remarkable than they were when newly planted. How desperately our country needs them. . . . In a countryside like ours, we need the mystery of the woods. A few trees along a dip in the road is a rest to us; even a rectangular planting of ungracious fir is a benefaction. No wonder that we love the old woods and when they are cut something of our youth, something protective, dies with them. Let us remember the lairds who set them there a hundred years ago.'

These words, coming from a farmer who cherishes the fascinating landscape of Buchan and its neighbouring regions, seem a sufficient justification for the work of the forester in their midst.

In conclusion, we quote a shortened version of the region's most famous historical ballad, based on *Bothy Songs and Ballads*, collected by John Ord, F.S.A. in 1930.

THE BALLAD OF THE BATTLE OF HARLAW

(*Anon. 15th Century*)

As I cam' in by Garioch land,
And doun by Neitherha',
There were fifty thousand Hielandmen,
A' marching tae Harlaw.

Wi' a drie, drie, drie, did dronilie,
Drie, did dronilie drie.

'O, cam' ye frae the Hielands, man?
O, cam' ye a' the wye?
Saw ye Macdonald and his men
As they cam' in frae Skye?'

'Yes, I was near, and near enough,
And I their number saw,
There were fifty thousand Hielandmen,
A' marching tae Harlaw.'

'Gin that be true,' said James the Rose,
'We'll no come muckle speed,
We'll cry upon our merry men,
And turn our horses' heid.'

'O na, O na,' said John the Graeme,
'That thing will never be,
The gallant Graemes were never beat,
We'll try what we can dee.'

They fell fu' close on ilka side,
Sic straiks ye never saw,
For ilka sword gaed clash for clash,
At the battle o' Harlaw!

The Hielandmen, wi' their lang swords,
They laid on us fu' sair,
And they drave back our merry men
Three acres breadth and mair.

The first ae straik that Forbes struck
He gar'd Macdonald reel,
And the next ae straik that Forbes struck,
The brave Macdonald fell.

And siccan a pitlarichie
I'm sure ye never saw,
As was among the Hielandmen
When they saw Macdonald fa'.

Some rade, some ran, and some did gang,
They were o' sma' record,
But Forbes and his merry men,
They slew them on the road.

On Mononday, at morning,
The battle it began,
And Saturday at gloamin'
Ye'd scarce ken'd wha had won.

Of fifty thousand Hielandmen
Scarce fifty-three went hame,
And oot o' a' the Lowlandmen,
But fifty marched wi' Graeme.

Gin onybody speir at ye
For them we took awa',
Ye tell them plain, and very plain,
They're sleeping at Harlaw.

Wi' a drie, drie, drie, did dronilie,
Drie, did dronilie drie.

Note.—This is a traditional version of the ballad of Harlaw as it is still sung in the farm-kitchens of the North East of Scotland. The ballad is not historically correct, as every student of Scottish history knows. Macdonald was not killed, but the chiefs of clans Macintosh and MacLean were. The flower of the Lowland army fell in the fight which lasted a whole day, but victory remained with them. The battle was fought on 24th July 1411. Although historians now say that the clash arose from feudal rivalries among barons, it is still regarded locally as a struggle between Lowlanders and Highlanders.

Some authorities state that the refrain – Wi' a drie, drie, drie did dronilie – is part of an old druidical chant; others hold that it represents the drone of the bagpipes.

Jock's Road through Glen Clova

The broon burn's speerin
Frettin a' the wye
'What gars ye gang
Auld Tinker's Road
Whaur there's neither fouk nor kye,

Kirk nor croft nor mill,
A' thing lane and still?'
But it's aye 'Haud on'
Wi the Tinker's Road
Fur the far side o the hill

Marion Angus

THE MOUNTH ROADS AND HILL TRACKS INTO DEESIDE AND STRATHDON

BY PETER MACINTYRE

To the south of the Dee valley lies a rampart of hills extending eastward from the massif of the Grampians. It rises to over 1,000 feet within 6 miles of the cliffs of the North Sea coast, and reaches 3,000 feet only 25 miles inland. The range is referred to in the ancient literature of the region as the Mounth, from the Gaelik *monadh* or *moine*, mountain or heathy expanse. Today the same is applied to the

Mounth Roads, hill tracks through the barrier, records of which show them to have been used by early travellers and cattle drovers for many centuries. A particular feature of them is that they usually followed the high shoulder of the hills, so keeping to firm going and avoiding the peaty hollows. Some are mere hill paths; others are mossy drove roads; a very few are macadam roads that cut cleanly through the range, by the use of which the motorist makes light of the earlier perils of the journey. Yet even today a winter passage by car through these hills may not be lightly undertaken, for two roads rise to more than 2,000 feet, and these are the highest motorable roads in Britain. In times of ice and snow they may be blocked for long periods.

For the walker the danger of being overtaken by storm and perishing far from help is very real. The distances between habitations are greater in these hill regions than anywhere else in Britain. It is tragic that despite local warnings and advice some ill-equipped walkers die almost every year through exhaustion and exposure.

The following descriptions deal with only a few of the score of routes into and out of the Don and Dee valleys. They are described for a traveller moving south, firstly by the ways that take him into those valleys, then by those that lead him over the watershed into the Angus glens.

1. LAIRIG GHRU

This hill path links the Spey at Aviemore with the Dee at Braemar, a distance of 27 miles. The walking may be reduced to 15 miles by motoring to Coylum Bridge, 2 miles from Aviemore, and again from Derry Lodge, 10 miles from Braemar. Derry Lodge is reached by an estate road over which a toll is charged, a key being obtained from Victoria Lodge, 4 miles above Braemar.

Striking into the ancient pine forest of Rothiemurchus by a well-marked track on the right a few hundred yards before Coylum Bridge, the walker may in the first mile or two be confused by the variety of paths he will encounter. The Lairig Ghru track follows the west bank of the Allt am Beannaidh for 2 miles, until this burn is joined from the east by the Allt Druidh. Immediately below the junction stands a bridge, erected by the Cairngorm Club in 1912. A plaque gives the following distances and average walking times:

	Hours	*Miles*
To Aviemore	1½	4
„ Coylum Bridge	¾	2
„ Lairig Ghru summit (2,733 feet)	3	5½
„ Derry Lodge	6½	14
„ Linn of Dee	8	18
„ Braemar	10	24½

Crossing the bridge the route follows the east bank of the Allt Druidh, rising steadily until in about 2 miles it emerges from the pinewoods and climbs more steeply into the narrowing cleft of the hills. The summit marks the watershed and the Inverness–Aberdeen county boundary. The going here is rough, with fallen boulders strewn across the valley floor.

For a while the track is fairly level, and passes beside the three small Pools of Dee, where the burn, running beneath the jumble of boulders, appears at the surface. Soon there is a sharp drop, and there comes into view on the right the great sweep of cliffs fringing the corries of Braeriach. The innermost recess is the Garbh Choire Mor, from which the snowfield is rarely known to disappear. Over the lip of the cliff are seen cascading the waters of the Dee, which rises in the Wells of Dee at 4,000 feet on the plateau behind. Surely no river has a more dramatic source, described by Hogg:

> . . . the grisly cliffs which guard
> the infant rills of Highland Dee.

In another mile the Allt Clach nan Taillear – the Burn of the Tailors' Stone – tumbles down on the left from the summit plateau of Ben Macdhui. Legend has it that three tailors made a wager that they would dance a reel in Rothiemurchus on Hogmanay, and another the same night in Braemar. After dancing in Speyside they set off through the Lairig for Deeside, but perished in the snow near the burn.

Across the rushing waters of the Dee the lonely bothy of Corrour, now a climbers' hut, comes in sight below the black rock slabs of the Devil's Point. Charcoal studies of deer by Landseer used to adorn the chimney piece, but are now unfortunately destroyed. A new footbridge replaces the wire rope that formerly was the only way to reach the hut dryshod.

The Derry track now leaves the Dee, climbing over the peaty base of Carn a Mhaim before dropping to the Luibeg Burn at 1,600 feet. Here one is again at the tree line, amongst the outriders of the natural pine forest of Mar which, like that of Rothiemurchus, is a relic of the ancient Caledonian forest once covering far wider tracts of the Highlands.

A short divergence upstream brings one to the aluminium footbridge set across the Luibeg where it flows between high granite walls. At the head of the glen can be seen the cliffs of Coire Sputan Dearg of Ben Macdhui, cleft by the 'red stone shoot' that gives the corrie its Gaelic name.

The bridge was first erected lower downstream in 1948, but was washed away in a great cloudburst in August 1956. The flats below

Glen Doll Forest and the Workers Hostel. The Capel Mounth track crosses the hill on the far left, towards Glen Muick

Glen Doll, at the head of Glen Clova, showing The Scorrie (left), Craig Rennett and Craig Mellon

Looking over the well-planned town of Fochabers towards Speymouth Forest and the Hill of Maud

are covered with gravel and boulder debris from this and the earlier 'muckle spate' of 1829.

Above the pine-dotted slopes of Carn Crom is the hollow of Coire Craobh an Oir where, according to legend, the first ray of the sun at midsummer strikes at the spot where a crock of gold lies buried.

From the next rise the first dwelling on Deeside comes into view. Luibeg Cottage is occupied by a stalker, who will feed the red deer by hand through the cottage window. The plantation surrounding Derry Lodge provides shelter for the large herds that come down to the glen in winter storms.

2. LECHT – GLEN GAIRN – BRAEMAR

Now a motor road, this was a 'new military road' linking the garrisons of Perth and Fort George, near Inverness – one of a number built by the English occupation army, and which opened up the Highlands after the 1745 rising. It is often attributed to General Wade, who had, however, left Scotland before the '45.

From Tomintoul the road follows the Conglass Water, across which the new plantations of Glenlivet Forest are seen. At the Well of the Lecht, where the road climbs steeply, is an inscription dated 1754: 'Five companies, the 33rd Regiment, Right Hon. Lord Chas. Hay, Colonel, made the road from here to the Spey'.

Half a mile farther up the Conglass Water are the disused buildings of the ironstone and manganese mine worked in the eighteenth century. The ore was carried in panniers on horseback to Nethy Forest on Speyside, where it was smelted with charcoal.

On the left as the road climbs is a small lochan, Lochan gun Doimhne – the Bottomless Loch – into which travellers used to cast stones.

The road reaches 2,114 feet half a mile south of the Banff–Aberdeen county boundary, which follows the watershed, crossed by the road at 2,090 feet. The steep drop to the Don at Cock Bridge (1,344 feet) allows a view of Corgarff Castle, standing on the slopes across the river. It witnessed much violence during the bitter feuds between Clans Forbes and Gordon, immortalised in the old ballad *Edom o' Gordon*. After the '45 the tower was occupied by an English garrison.

The military road followed the right bank of the Don before striking south to the Glas Choille pass, near the top of which it is joined by the modern road. A stone bridge may be seen, across the moor, a quarter of a mile below the junction. Glas Choille means 'green wood', which hardly fits the present moorland. The road reaches 1,800 feet before the long descent to Gairnshiel, where the spectacular hump-backed bridge over the River Gairn is still in use.

There follows another rise before dropping steeply into Deeside, the descent giving a fine view over Balmoral Castle to the cliffs of Lochnagar (3,786 feet).

From here to Braemar the only sign of the old road is the fine old Bridge of Dee at Invercauld, built in 1752–53; it stands beside the modern bridge.

Braemar Castle, like Corgarff, housed garrison troops after the '45.

3. BRAEMAR – CAIRNWELL – GLEN SHEE

Turning south from Braemar the military road, built in 1750, followed the west side of the Clunie Water for three miles before crossing by Fraser's Bridge to the present main road. This was completed in 1864 by the Prince Consort and the Laird of Invercauld.

Seven miles above Braemar the road crosses the Cairnwell Burn by the Sheann Spittal Bridge. This marks the site of the old spittal or hospice which, with the Spittal of Glen Shee at the south side of the Cairnwell, indicates the ancient use of this crossing as an important Mounth route. The old road held to the east bank of the burn for a farther half mile, crossing by a bridge standing below the modern road. In two miles the summit is reached on the Aberdeen–Perth county boundary at 2,199 feet. This is the highest public road in Britain. Spittal of Glenshee is six miles away, below the Devil's Elbow.

Glen Shee – Glen of the Fairies – is rich in Fingalian legend. Diarmad, who had stolen Fingal's Queen, Grainne, slew the great boar of Ben Gulbein (Ben Gulabin stands at the head of the glen). Fingal bade Diarmad measure the monster barefoot. This he did, and the poisoned bristles piercing his foot, Diarmad died in agony. In despair Grainne flung herself upon an arrow, and the lovers were buried, together with Diarmad's white hounds, on a mound or tomb (Gaelic *tom*, a hill), which may be seen across the river from the Spittal. The tale is told by the Rev. T. D. Miller in *Tales of a Highland Parish, Glen Shee.*

Six miles down the glen stands Mount Blair (2,441 feet), conspicuous on the east flank when approaching from the south. It has been suggested that this was the site of the victory of Agricola over the Picts in 84 A.D. Tacitus, in his description, records the scene of the battle as Mons Graupius. If the substitution of u for m can be explained then it may be supposed that the historian was rendering into Latin the ancient name of this Grampian Mountain region.

4. THE LADDER

This hill walk links the Banffshire forest of Glenlivet with that of

Tornashean on Deeside. The distance from Chapeltown of Glenlivet to Bellabeg in Strathdon is ten miles. The name Ladder, applied to this range of hills, comes from the Gaelic *leitir*, a slope.

A mile across the moor from Chapeltown stands the farmhouse of Scalan where, when the Roman Catholic faith was proscribed, a seminary for the priesthood was maintained. It was frequently raided, and in 1746 was sacked by the Duke of Cumberland's orders. However it survives today as Blair's College on Deeside.

The track goes by Ladderfoot, steeply up the Ladder Burn to the level ridge at 2,432 feet. This is a 'coffin road'. The men of the parish often carried their dead many miles for burial. Shortly after leaving Ladderfoot Farm a cairn is passed beside the path. It was the custom when the coffinbearers rested, for each member to place a stone at the point where the coffin was set down. The story goes that on this occasion the men of Donside were carrying a corpse for burial at Chapeltown. The Glenlivet men were to take over their charge at the top of the hill. But having a good supply of whisky they got no farther than Ladderfoot. The Donside men were obliged to carry on down the hill, where they came upon the men of Glenlivet. Blows were exchanged, and the cairn marks the spot where the coffin rested whilst the argument was settled.

The descent is by a wide ridge to the ruins of Duffdefiance. This was built by Lucky Thain, a Glenlivet crofter, who came over the hill and had his house up and the 'lum reekin'' before the Laird, one Duff, could challenge him for 'squatting', thus he obtained 'squatter's rights' to his property.

Here one enters Tornashean Forest, through which a motorable track leads to the public road and Bellabeg in Strathdon.

Two well-known Mounth tracks lead into Glen Clova from Deeside:

(5) The Tolmount, from Braemar (18 miles).
(6) The Capel Mounth, from Ballater (18 miles).

5. THE TOLMOUNT

This route leaves the Glen Clunie road at Auchallater, two miles south of Braemar. A locked gate prevents vehicle access to Loch Callater, four miles up the glen. Beside the lodge at the foot of the loch is the Priest's Well, which tradition says was thawed by a local priest during a great frost.

From here the path leads along the north shore of the loch to the head of the glen, where a steep ascent up the left hand burn takes one to the summit at 2,863 feet, in the shallow dip to the east of The Tolmount (3,143 feet).

After two miles along a fairly level ridge there is a steep drop into

Glen Doll. This is known as Jock's Road, though the identity of Jock is a mystery. It may be 'Hawk's Road', from seabhag, as in Bad an-t Seabhag (pron. *baddenjowk*), the hawk's bluff.

The three-mile walk down the White Water to the roadhead at Braedownie is dominated by gully-riven crags and deeply recessed corries on the south flank of the glen. Glen Doll Lodge stands in a plantation at the upper end of the forest.

6. THE CAPEL MOUNTH

This route links Alltcailleach Forest in Glen Muick with Glen Doll Forest.

From the public roadend at Spittal of Muick the track climbs to the plateau east of Loch Muick, reaching 2,275 feet before 1,300 feet of zigzag descent to the River South Esk, a mile above Braedownie.

An alternative route lies along the south shore of Loch Muick, climbing steeply up Corrie Chash at its head, over the watershed, and down to a fine larch plantation at Bachnagairn in the head of the Esk valley.

7. THE FIR MOUNTH

This track crosses from Dinnet to Tarfside in Glen Esk, a distance of thirteen miles. It is an ancient way which was improved in the eighteenth century for military use.

Crossing the Bridge (once Boat) of Dinnet, Glen Tanar is entered by Belrorie to Braeloine Bridge over the Water of Tanar. The track on the east side of the glen is gained, passing thriving young plantations established by the present proprietor, Lord Glentanar. This region has for centuries been heavily wooded, and well into the nineteenth century timber was floated down the Tanar and the Dee to the shipyards in Aberdeen.

Rising out of the glen the track crosses the Burn of Skinna and enters Allachy Wood, an impressive remnant of the old Caledonian Pine forest. Reaching open country one passes through a deer fence near the top of Craigmahandle and continues south to Hill of St. Colm. There follow two miles of plateau by Gannoch and Tampie, at the top of which (2,363 feet) the Fir Mounth reaches its highest point before dropping down the long shoulder to the Water of Tarf.

An eastern branch of this road leaves Deeside at Aboyne. Wyntoun's 'Chronicle', written about 400 A.D., records a crossing of the Mounth in its description of the death of Macbeth. There is no record of the route the fugitive took on his flight from Birnam, but it is established that he was killed at Lumphanan, near Aboyne, and not, as Shakespeare represented, at Dunsinane. He must therefore

have crossed one of the Mounth roads. After describing how Birnam Wood started to move, Wyntoun narrates:

> Off this quhen he had seyn the sicht
> He was richt wa and tuk the flicht;
> The flittande wode thai cal it ay
> Thar lange tyme eftyr hende that day,
> Our the Mounth thai chast him than
> Til the wode of Lwnfannan.

The Forestry Commission plantations above Lumphanan – part of the Cushnie Forest – look across the little glen to the beech grove in the midst of which stands Macbeth's burial cairn.

8. CAIRN O' MOUNTH

This was one of the few roads into the Highlands at the start of the eighteenth century. It went by Huntly to Elgin. Robert the Bruce and the Stuart kings are known to have travelled it. It is believed to have been used by Edward I on his return south after his invasion of Scotland in 1296.

Today it is an important tourist route linking Deeside with the coastal plain of Angus, of which a fine view is got from the summit cairn at 1,475 feet.

Near the northern end is Blackhall Forest, while the magnificent woods covering the lower slopes are those of the Glen Dye and Fasque Estates. Drumtochty Forest lies just to the east of the point where the road makes its steep descent to Clattering Brig on the south side of the Mounth.

The route follows Glen Dye, crossing the river by the Bridge of Dye, the oldest bridge in the Dee valley after the Bridge of Dee at Aberdeen. It was built about 1680. Authority to exact toll charges for its upkeep is granted in the 'Acts of Scots Parliament of 1681', in which one reads 'which Bridge standeth upon one of the most impetuous waters in the Kingdom where many have perished.'

Two miles to the west stands Clachnaben (1,900 feet). The prominent rock tor on its side is associated with a Satanic legend. The Devil and his dame waged a bitter quarrel, to settle which they at length emerged from the depths, and continued the affray on this hillside. Satan, failing to get the best of the argument, rushed in rage down the slope where:

> Yon rock, itself a mountain, up he tore
> From its old seat in yonder shaggy plain,
> Upon his shoulders the huge mass he bore,
> And quickly hied him up the hill again.

The Devil then hurled the rock at his wife, crushing her into the hill where it fell.

The legend was put into lively verse by the Rev. George Knowles, Minister of Birse from 1750–89. His poem was reproduced in the Scots Magazine in April 1815.

9. GLEN DOLL TO GLEN PROSEN AND GLEN ISLA

To complete a link with the more southerly forests described in this guide, details of the path linking Glen Doll Forest and Youth Hostel with the Youth Hostel beside Glen Isla Forest, follow.

From Glen Doll Hostel go south, past the Forester's House at Acharn, towards a smallholding called Doll Cottage. Just before this, bear right and follow a forest track steeply uphill to a deer fence. Cross this by a stile, and you will see a clear, though steep, path – the Kilbo Track, running up the left side of a long glen. Follow this to the saddle parting Glen Doll from Glen Prosen; from this point 2,700 feet up, it is easy to ascend Dreish on the east, or Mayar on the west.

Another deer fence will now be seen on the right (west), follow this to a bend, cross it by a stile, and follow it downhill by a faint track into Glen Prosen. On reaching the river (7 miles from Glen Doll) recross the deer fence and turn downstream for Kirriemuir, 20 miles distant.

For Glen Isla follow this track down Glen Prosen for $3\frac{1}{2}$ miles of hill track, and $1\frac{1}{2}$ miles of tarred road, to the isolated farm called Cairmuir. Here turn sharp right on to a footpath running west over the Hill of Strone to Glenhead Lodge, 4 miles away. The easiest route to find is the road down the glen to Dykends crossroads, 5 miles away; a right-hand turn there brings one, in 2 miles to Glen Isla Youth Hostel, making in all 24 miles from Glen Doll.

For a pleasanter route, 2 miles shorter, leave the road at a sharp bend just below Glenhead Lodge. Go through a gate, cross a footbridge, and follow the public right of way through a narrow gap called the Moss of Glanny. Bear right, round the flank of the hill, then strike west across two burns for Glen Markie Lodge, a prominent white building. Then follow the road down the glen until you reach the public road, where you turn left for the hostel.

GENERAL INFORMATION

GETTING ABOUT

Roads

All the main roads in the North East, in fact all the roads coloured on the Ordnance Survey and similar maps, are maintained to a high standard. Uncoloured minor roads, which are often of great help for reaching the forests, are sometimes tarred, sometimes merely gravelled, and sometimes no more than tracks. Some forest roads are public rights of way. The others are normally open to walkers but not to cars.

Gradients on the main roads, and on the forest roads, are usually easy, but many by-roads take a steep and winding course. A few roads are liable to be blocked by snow in winter, sometimes for several weeks together. The Devil's Elbow road, linking Braemar with Blairgowrie, and the Lecht Road between Balmoral and Tomintoul, are the two most frequently affected; both climb to over 2,000 feet. Otherwise, though winter snowfalls are frequent and often heavy, the road authorities usually clear a path promptly with their snow ploughs.

Most of the main roads are so well graded that they offer little difficulty to the cyclist; the Devil's Elbow road, the Lecht Road, and the road from Tomintoul to Grantown are exceptions, all three having steep, long gradients.

Buses

The principal company operating motor bus services in the region is Messrs. Alexanders, of Gairn Terrace, Hardgate, Aberdeen. Their *Northern Area* timetable, price 4d. (postage 4d. extra), covers the area from Dundee to Elgin, and also shows connections to Central Scotland, and to Inverness. Nearly all the forests lie close to bus routes radiating from Aberdeen; there are, however, few cross links between these routes.

Messrs. Strachans of Ballater operate services from Bon Accord Street, Aberdeen, along the south side of the Dee to Banchory; one service continues on the south side to Ballater; the other follows the north side to Ballater and Braemar. Timetable, gratis, from Strachan's Garage, Ballater.

Glen Livet Forest is served by the local bus service from Dufftown to Tomintoul, run by Messrs. Low of Tomintoul, from whom details

may be obtained. At present their buses run only on Mondays, Thursdays, Fridays, and Saturdays.

COACH TOURS

Messrs. Alexanders, of 33 Dee Street, Aberdeen, operate, throughout the season, no less than 70 day tours covering all parts of the region. Other firms offer similar services.

TRAINS

The main line from London and Edinburgh runs through the southern portion of the region from Dundee to Aberdeen. The main line from Glasgow and Perth comes in through Forfar, with trains continuing to Aberdeen.

The Dee valley is served by a branch line that runs as far as Ballater. Another branch line extends north from Aberdeen to Fraserburgh, with a branch striking off it to Peterhead.

North-west of Aberdeen the main line towards Inverness runs through Inverurie and Huntly, and then proceeds to Elgin by no less than three routes. One follows the coast via Portsoy, Cullen, and Buckie, with a branch from Tillynaught to Banff; another takes a direct route through Keith Junction and Mulben; the third goes inland through Keith Town, Dufftown, Craigellachie, and Rothes. The northern route reveals the sea, while the two inland ones show the traveller the forests.

From Craigellachie a branch line runs up the Spey valley towards Grantown and Aviemore, where it joins the main line from Inverness to Perth and the south.

These are the only passenger lines operating nowadays within our region. Many others appear on the maps, but now serve only for goods traffic. Details of all services appear in British Railways *Scottish Region Timetable*, price 1s. (plus postage 6d.) from Aberdeen Station.

The *A.B.C. North of Scotland Time Table*, published by Aberdeen Journals Ltd., 20 Broad Street, Aberdeen, at 1s. (postage 3d.), gives details of train, bus, steamer, and air services, serving Aberdeen and district.

ORGANISED VISITS

Enquiries concerning educational visits to the forests by organised parties should be directed to the Conservator of Forests for East Scotland, 6 Queen's Gate, Aberdeen (phone, Aberdeen 33361).

WHERE TO STAY

HOTEL ACCOMMODATION

This is ample and good, with a reasonable range from first class

hotels to modest establishments offering no more than bed and breakfast. The district includes several resorts and is used to welcoming large numbers of visitors annually. In a brief guide of this kind it is not possible to list hotels by name. Addresses can readily be found in standard reference books, such as *Where to Stay in Scotland*, obtainable from the Scottish Tourist Board, Rutland Place, Edinburgh, 1, price 2s. 6d. (plus postage 9d.).

For addresses in Aberdeen, write to the Information Office, Union Street, Aberdeen, for a holiday guide. Similar guides are also issued at Stonehaven, Arbroath and Montrose, and may be obtained from the Information Officer for each place.

YOUTH HOSTELS

There are Youth Hostels at Fochabers, Tomintoul, Corgarff, Lumsden near Huntly, Inverey, Braemar, Ballater, Feughside near Banchory, Aberdeen, Auchmithie near Arbroath, Glendoll, Glenisla and Dundee. Details will be found in the *Hostel Handbook* obtainable from the Scottish Youth Hostels Association, 7 Bruntsfield Crescent, Edinburgh, 10, price 1s. (plus postage 4d.).

FEATURES OF INTEREST

ANCIENT MONUMENTS, NOTABLE HOUSES, MUSEUMS AND GARDENS OPEN TO THE PUBLIC

Certain of these are open daily throughout the year, others on certain days or during the summer only. In some instances, a charge is made for admission.

Cullen:	Cullen House and Gardens (The Countess of Seafield). Deskford Church (Ministry of Works).
Dufftown:	Balvenie, Blairfindy, Dramin and Auchindoun Castles (all Ministry of Works).
Huntly:	Huntly Castle (Ministry of Works), Leith Hall, Kennethmont (National Trust for Scotland).
Turriff:	Delgaty Castle and Museum (The seat of Clan Hay).
Methlick:	Haddo House and Gardens (The Marquis of Aberdeen).
Pitmedden:	Pitmedden Garden (National Trust for Scotland).
Old Deer:	Abbey of Deer (Ministry of Works).
Kildrummy:	Kildrummy Castle (Ministry of Works).
Corgarff:	Corgarff Castle (Ministry of Works).
Banchory:	Crathes Castle and Gardens (National Trust for Scotland).
Balmoral:	Balmoral Castle Gardens (Her Majesty the Queen).

Aberdeen:	Art Gallery and Museum
	Provost Ross's House, Shiprow (National Trust for Scotland).
	Provost Skene's House (Aberdeen Corporation); includes a regional museum.
Tolquhon	Castle, 16 miles N.N.W. of Aberdeen (Ministry of Works).
Stonehaven:	Muchalls Castle, 3 miles to the north (M. A. Simpson, Esq.).
	Dunnottar Castle, 1 mile south (Viscount Cowdray).
Glenesk:	The Retreat: Folk Museum and Highland Home Industries.
Kirriemuir:	J. M. Barrie's Birthplace (National Trust for Scotland).
Glamis:	Glamis Castle (The Earl of Strathmore and Kinghorne).
	Angus Folk Collection in the Kirkwynd Cottages (National Trust for Scotland).

Further information on these and other properties is available from:

The National Trust for Scotland, 5 Charlotte Square, Edinburgh, 2 and:

The General Organiser, Scotlands' Garden Scheme, 26 Castle Terrace, Edinburgh, 1.

Guides to the principal ancient monuments are issued by the Ministry of Works, and a list (Sectional List No. 30) is obtainable free of charge from H.M. Stationery Office, 13a Castle Street, Edinburgh.

NATURE RESERVES

The great Cairngorms Reserve of the Nature Conservancy lies on the east of the region; it extends from the upper reaches of the Dee, above Braemar, over to Speyside. The Sands of Forvie, on the coast near Newburgh, twelve miles north-east of Aberdeen, form a reserve of a strongly contrasted type, being dunes at the estuary of the River Ythan. The Nature Conservancy's Scottish headquarters are at 12 Hope Terrace, Edinburgh, 9.

INDUSTRIES

Farming and sea fishing are the principal occupations of the rural North East. Aberdeen and Dundee are both important seaports and centres of engineering industry. In addition, Aberdeen is a centre

for paper making, and Dundee the leading town in the jute industry. Shipbuilding is carried on at Aberdeen, Peterhead, Fraserburgh, and Buckie. Food preserving has become a major activity, and includes jam factories at Dundee and canneries at Peterhead, Fraserburgh, and Fochabers. Whisky distilleries are found throughout the region, and there is an especial concentration in the Glen Livet district, from Tomintoul down the straths towards Dufftown, Rothes, and the coast. Woollen goods are made at Keith and Huntly, and also around Aberdeen. Lavender is grown, and its perfume distilled, at Banchory.

Mineral wealth is represented by the great granite quarries at Rubislaw in Aberdeen, at Kemnay, Tilliefoure, Peterhead, and several other centres. Limestone is quarried at Dufftown and Tomintoul, and used mainly for road building; remains of kilns where lime was burnt for mortar or for agricultural use are frequent on the limestone belts. Formerly much local sandstone was quarried for building. Nowadays concrete and precast concrete are more usual materials; gravels and sands for these are dug near the mouth of the Spey. Some peat is still cut for winter fuel, and rights to sections of peat mosses are attached to many farmsteads. At New Pitsligo, peat is worked commercially for horticultural use. Most distilleries use peat to provide the smoke that kills the malt and adds its peculiar flavour to the spirits.

In the past, every substantial farm had its own meal mill, and the remains of these water mills, each with its own lade running off a nearby burn, are a common incident in the landscape.

REGIONAL RECREATIONS

Golf is the most universal sport in the North East, and every town, large or small, has its own course, usually open to visitors.

Spey, Deveron, Don, and Dee are among the finest salmon rivers of Scotland. The fish are taken mainly for sport, by rod and line, but there are also commercial fisheries which employ nets, notably at the mouth of the Spey. A guide to *Fishings, Aberdeen and District*, covering the rivers from Montrose to the Spey, is issued free by the Aberdeen Corporation Publicity Department, 20 Union Street, Aberdeen.

Canoeing, of an adventurous kind suited to skilled people who are also good swimmers, is possible on the Dee, the Don, and the Spey.

The heather moors of the North East are unrivalled for grouse shooting. On the lower ground, many estates have pheasant coverts, while some of the higher hill ranges hold deer stalking grounds.

This district holds some of the best ski-ing grounds in Scotland,

such as those around Braemar, in Glen Shee, near the Devil's Elbow pass and the Lecht Road; there are organised ski-ing centres at Tomintoul, Dinnett, and Glen Isla Youth Hostel.

The hill walks include the famous Mounth passes which link Strathmore with Deeside and the northern lowlands beyond. Some of these are old drove roads, and some once saw the passage of campaigning armies, including those of the English King Edward I, the 'hammer of the Scots', in 1296 and 1303 A.D. 'Mounth' by the way, comes from Gaelic *monadh* meaning wild mountainous moorland.

Highland Games are held annually at Braemar, Ballater, Aboyne, and Strathdon.

There are pony-trekking centres at Spittal of Glenshee near Glen Isla, at Rothes in Morayshire, and the Ballater Youth Hostel; and riding schools at several other towns.

FOREST NAMES AND THEIR ORIGINS

The name of the nearest town is added in brackets.

Alltcailleach: (Ballater) — Gaelic *allt a chailleach* – high burn of the auld wife.

Aultmore: (Buckie) — Gaelic *allt mor* – great upland (*allt* meaning high ground rather than high water).

Bennachie: (Inverurie) — Gaelic *beinn a ciche* – hill of the pap, from the shape of its most prominent peak, the Mither Tap.

The Bin: (Huntly) — Gaelic *beinn* – a ben or prominent hill.

Blackhall: (Banchory) — After the castle of that name, now demolished.

Clashindarroch: (Huntly) — From the farmstead of *clachan darach*, Gaelic for the 'hamlet of the oakwood'.

Cushnie: (Alford) — From the Glen of Cushnie, in the Parish of Leochel Cushnie; *cuisneach* is Gaelic for 'frosty', and the glen is noted for hard, late frosts.

Delgaty: (Turriff) — After Delgaty Castle, from Gaelic *dail gaothach*, windy field.

Drumtochty: (Laurencekirk) — After Drumtochty Castle, from the Gaelic *drum tochtach* – highest ridge.

Durris: (Banchory) — After the estate. Durris is probably Gaelic *dorus*, a doorway or pass, here referring to the narrow way along the Dee.

Elchies: (Archiestown) — After the estate. Gaelic *eilich*, a rock.

Fetteresso: (Stonehaven) — After the estate. Fetteresso is Pictish Gaelic *foddir esso* – meaning 'field of the waterfalls' and relates to the site of the old castle.

Forest of Deer: (Old Deer) — After the Abbey of Deer, derived in turn from Gaelic *darach*, oakwood.

Glendoll: (Kirriemuir) — After the glen. Gaelic *gleann dail*, glen of the fields.

Glenisla: (Kirriemuir) — After the River Isla. Norse *ile*, to hurry, hence swift river.

Glenlivet: (Tomintoul) — After the River Livet. Gaelic *liobhaite*, smooth polished slope.

Glenprosen: (Kirriemuir) — After the River Prosen. Gaelic *brosnach*, a river.

Hallyburton: (Coupar Angus) — From the estate of Hallyburton House. ? Anglo-Saxon: 'Village by the sacred inclosure.'

Inglismaldie: (Laurencekirk) — Pronounced 'Inglismaddie'. After the ancient castle. Scots: The Englishman's mound.

Kemnay: (Inverurie) — After the village of Kemnay, famous for its grey granite quarries; Kemnay comes from Gaelic *caman*, crooked and refers to the bend in the River Don.

Kirkhill: (Aberdeen) — Church hill.

Midmar: (Banchory) — From the parish and castle of Midmar, in Gaelic *meud machair*, great level plain.

Montreathmont: (Brechin) — Pronounced 'Montrimont'. After Montreathmont Muir.

Pitfichie: (Alford) — From Pitfichie Hill, 1,244 feet, on the estate of Monymusk, and Gaelic *pit chuithain*, mutated to 'pit fuichie' – place of the cattle fold.

Rosarie: (Dufftown) — Gaelic *ros airidh* – the headland of the shieling.

Scootmore: (Aberlour) — From the hill of Scootmore above Blacksboat.

Speymouth: (Fochabers) — From the Speymouth estate of the Duke of Richmond and Gordon; indirectly from the River Spey.

Teindland: (Fochabers) — After Teindland Farm, where, it is said, the teinds or tithes due to the Church for the pasturing of stock on the hill were once collected.

Tornashean: (Ballater) — Gaelic *tor na sithein* – hillock of the fairies, which lies in Glen Carrie.

Whitehaugh: (Alford) — From the estate, three miles south-east, beside the River Don. 'Haugh' is Scots for a low-lying pasture bordering a stream, and fits the estate, not the forest. In origin, possibly Norse *hvid hage* – white fields.

MAPS

On the *quarter-inch* scale the whole of the region is shown on Sheet 5, entitled 'The Eastern Highlands', in the *Scotland* series of the Ordnance Survey's Fourth Edition. In the Fifth Edition now in preparation, it will appear on Sheet 5.

In Messrs. Bartholomew's *half-inch* series nearly all the region is included on two sheets, namely: No. 56 entitled 'Buchan and Strathbogie', and No. 52 entitled 'Deeside'. The region south of Montrose falls on Sheet 49, entitled 'Firth of Tay'.

On the Ordnance Survey's *one-inch-to-the-mile* scale (Seventh Series), eleven sheets are needed to cover the region fully, the sequence from North to South and West to East being:

29 (Elgin)	30 (Banff)	31 (Peterhead)
38 (Grantown and Cairngorm)		39 (Strathdon)
40 (Aberdeen)	41 (Braemar)	42 (Ballater)
43 (Stonehaven)	49 (Blairgowrie)	50 (Forfar)

LOCAL NAMES FOR FOREST TREES

In the North East, local names derived from those brought in by Norse settlers are still current. Thus the Scots pine is still commonly called by its older name of *fir* (Norse *furu*). The birch is always *birk* (Norse *björk*), and the oak is called *aik* (Norse *ek*). The rowan is the *rodden tree* (Norse *rodden tre*), a name derived from its red berries. The elder is called *bourtree* or *bore-tree* (Norse *bor tre*), after its hollow stem. The name *larick* for larch, however, is of local development from Latin *larix*, as this tree comes from Switzerland.

NOTABLE VIEWPOINTS

In a district where a fresh view awaits the traveller around every turn, it is possible to list only a few places that excel by the breadth or magnificence of their vistas.

Banchory Devenick. The secondary road from Bridge of Dee, just south of Aberdeen, to Banchory Devenick Post Office, climbs a steep hill beside one of the young woods of Durris Forest. Looking north from this point, the whole extent of the City of Aberdeen, topped by towers and spires of its greater buildings, is revealed. This view has often been painted by artists, and once attracted a visit by Albert the Prince Consort.

The Slack of Tarland. The main road, A 974, from Aberdeen west to Tarland, crosses at a point three miles short of the latter place, the ridge of hills sheltering the Howe of Cromar. From the summit, the Grampians come boldly into view with Morven to the right and Mount Keen and far Lochnagar on the left.

Tillypronie Hill. Halfway south from Strathdon, on the A 97 road to Cambus o' May, the traveller tops a rise, 1,213 feet above sea level, that displays the amazing view southwards over the Howe of Cromar and the broad strath of the Dee. The most prominent features are Mount Keen, 3,077 feet high and the easternmost 'Munro' in Scotland, and Mount Battock, 2,555 feet, which rises away beyond the Forest of Birse on the borders of Kincardine and Angus.

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